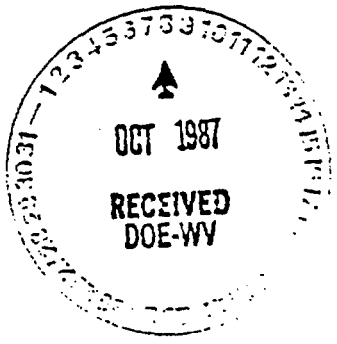
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278



WVDP-187-01
Building 01-14 Ventilation System
Approval to Construct/Modify
Sources of Airborne Radionuclide Emissions

In compliance with provisions of the Clean Air Act, as amended (42 U.S.C. §7401 et. seq.) the Department of Energy West Valley Demonstration Project Office is granted interim approval to construct/modify sources WVDP-187-01, located at the West Valley Demonstration Project Site in West Valley, New York. This approval is granted in accordance with the plans and materials submitted with the applications and with Federal Regulations governing the National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61), Subpart H. Any conditions attached to this document are considered part of this approval.

Failure to comply with any conditions or terms set forth in this approval may result in sanctions available under the authority of section 1-604 of Executive Order 12088 as well as enforcement procedures established by the Clean Air Act.

This approval to construct/modify grants no relief from the responsibility for compliance with other applicable provisions of Federal regulations. This approval shall be effective immediately after receipt of the approval to construct/modify by the applicant.

Dated October 5, 1987

Regional Administrator

Permit Conditions

I. Emergency Notification

A. In the event of an accidental/unplanned release of radionuclides which leads to an air emission that may cause the standards of 40 CFR 61 to be exceeded; or may result in a health threat to the public; the DOE-WVDP shall make timely notification to state, local and Federal agencies.

B. Initial phone notification should include the time of the accident/release; location of accident/release; estimate of quantity release; emergency steps taken to contain/control the release; type of assistance needed; and the name and title of person reporting the incident. A brief written summary of the event shall be submitted to Director, Air & Waste Management Division (Attn: Regional Radiation Representative) within 30 days of the event.

C. EPA Phone Notification - In Order of Preference

1. Region II - Regional Radiation Representative
   Paul A. Giardina
   Work - 212-264-4418
   After Hours - 201-548-8730

2. Region II - Radiation Safety Officer
   Shawn W. Googins
   Work - 212-264-6459
   Home - 201-846-0489

3. Region II - Health Physicist
   Larainne Koehler
   Work - 212-264-0546
   Home - 201-627-0018

4. Region II - 24 Hour Emergency Hotline
   201-548-8730

D. New York State Radiological Health Contact

1. New York State Warning Point
   518-457-2200

2. Backup Number (New York State Police)
   518-456-6811

3. New York State Director of Bureau of Environmental Radiation Protection
   Dr. Karim Rimawi
   Work - 518-458-6461
   Off-Duty - 518-439-0865

4. New York State Chief of Environmental Radiation Section
   William Condon
   Work - 518-458-6459
   Off-Duty - 518-463-3704

II. Permit Expiration

A. This interim approval to construct/modify will remain in effect until final approval is granted by the Regional Administrator or his designee. The approval to Construct/Modify is not transferable to another owner/operator.

B. The Department of Energy (DOE) may submit to the Regional Administrator (Region II Air & Waste Management Director) a written application for a determination of whether actions intended to be taken by the DOE/WVDP Office constitute a modification or construction of a source subject to the standard. The Regional Administrator will notify the owner or operator of his determination within 30 days after receiving sufficient information to evaluate the application (40 CFR 61.06)

C. If intended actions to be taken by the WVDP are determined to constitute construction/modification which effects an existing permitted source, the new permit and conditions shall supercede and/or amend the existing permit.

D. Updates in notification requirements and phone contacts supercede previous permit conditions.

III. Notification of Startup

A. The owner or operator of each stationary source which will have an initial startup after the effective date of the standard shall provide written notification to the Administrator as follows:

1. The 30-60 day notification required for the WVDP-187-01 source (Building 01-14 system) is waived.

2. A notification of the WVDP-187-01 source startup once radioactive materials are processed (other than those noted in your letters of May 20, 1987 and June 30, 1987) within 15 days of that date.

IV. Facility Operation/Maintenance

The facility owner/operator shall maintain all equipment, facilities, and systems installed or used to achieve compliance with the standard (40 CFR 61.92) in a manner consistent with good air pollution control practices for minimizing emissions. Operations, testing and maintenance of such air pollution control systems shall be conducted as noted in the pertinent general information sections (sections B, C, and D) included with your submissions/ letter of August 4, 1987. These procedures are acceptable methods in the conduct of a good air pollution control program. Records of maintenance, inspection, testing, repair, monitoring data, and standard operating procedures for conducting such activities shall be maintained pursuant to 40 CFR 61.12 (c).

V. Severability

The provisions of this approval to construct/modify are severable, and, if any provision of this approval to construct/modify is held invalid, the remainder of this approval to construct/modify shall not be affected thereby.

VI. Other Applicable Regulations

The owner/operator of the West Valley Demonstration Project shall construct and operate the proposed source in compliance with all other applicable provisions of 40 CFR Parts 52, 60, and 61.

VIII. Agency Notification

A. All correspondence as required by this approval to construct/modify shall be sent to:

U.S. Environmental Protection Agency
Director, Air & Waste Management Division
Attention: Regional Radiation Representative
2 AWM
26 Federal Plaza
New York, New York 10278

ATTACHMENT D

Request for Approval to Cancel Existing Permit
Sources of Atmospheric Emissions of Radionuclides

I. Name and Address of Applicant

U.S. Department of Energy
West Valley Demonstration Project
10282 Rock Springs Rd.
West Valley, New York 14171-9799

Operating Contractor:

West Valley Nuclear Services Co., LLC.
10282 Rock Springs Rd.
West Valley, New York 14171-9799

II. Name and Location of Source

Name: **01-14 Building Ventilation System (Old Cement Solidification System)**

Location: West Valley Demonstration Project
10282 Rock Springs Road
West Valley, New York

Latitude: 42 degrees 27 minutes N

Longitude: 78 degrees 39 minutes W

Date of Approval: October 5, 1987

Date of Startup: October 9, 1987

III. Release Point Information

Emission Point ID:	0114HV
Ground Elevation (Ft MSL):	1413
Stack Height (Ft):	73
Height Above Structure (Ft):	15.3
Inside Dimensions (Inches):	23.6
Exit Temperature (degrees Fehrenheit):	100
Exit Velocity (Ft/Sec):	50
Exit Volume (ACFM):	9700

IV. Overview of Operations

The 01-14 Building was constructed as part of a planned expansion of the nuclear fuel reprocessing facility by the former site operator (Nuclear Fuel Services, Co.). It was originally designed to house treatment equipment for off-gas from the PUREX fuel reprocessing process in the 01 cell and acid recovery equipment in the 14 cell. The building and equipment were ready for use but never entered radioactive service because fuel reprocessing operations were terminated at the West Valley facility.

The WVDP has refurbished and modified the building and some equipment contained therein to support high-level radioactive waste vitrification operations at the site. Off-gas from the vitrification process is routed to the 01 cell, where the NOX abatement system removes Nitrogen Oxides from the off-gas prior to discharge from the process building main stack. Equipment In the acid recovery cell was removed and the structure was modified to house a low-level liquid radioactive waste Cement Solidification System (CSS). This system had received concentrated radioactive solutions from the liquid waste treatment system (LWTS). In batch operation, the solutions are blended with dry Portland cement in high-shear mixers and poured into steel drums. The system includes liquid waste and dry cement handling and dispensing equipment, two high-shear cement mixers and a drum handling system.

The air discharge from the 01-14 Building Ventilation System is presently comprised of ventilation air from the CSS cell, control room, and support areas. Ventilation air from the off-gas cell and transfer trench between the vitrification cell and the 01-14 Building is also vented by this system. During normal operations, vitrification process off-gas is contained in the off-gas treatment equipment and is not a component of the 01-14 Building ventilation release, but rather will be discharged from the process building main stack. The major potential source of airborne radioactivity to be discharged from the 01-14 Building ventilation system is from the cement solidification system, which will only be operated intermittently if at all in the future. The ventilation system may be adapted to ventilate emissions from new solidification technologies which will be assessed prior to construction for permit applicability. Vitrification Off-gas may contribute a very small constituent of the 01-14 building ventilation exhaust under normal conditions.

V. Source Term Development

The distribution of radionuclides assumed to be processed by the cement solidification system was determined using the HLW inventory of tank 8D-2. See Table 1.

The CSS design criteria limit of 1 Ci of Cs-137 per waste drum is assumed. The quantity of all other radionuclides in each CSS waste drum is based on scaling radionuclides to Cs-137 and on the high level waste inventory in 8D-2. It is assumed that the CSS will be used to create an additional 1000 drums per year.

40 CFR 61, Appendix D lists a physical state factor of 0.001 for liquid and particulate solids. This represents the processing of concentrated liquids from the LWTS evaporator.

The CSS is ventilated by trains comprised of two HEPA filters in series. Per Appendix D, a DF of 100 is assumed for each filter. No abatement is assumed for C-14 and I-129 because these radionuclides have the potential to become gaseous compounds.

VI. Dose Assessment

The PEDE to the MEOSI was calculated using CAP88-PC modeling and 40 CFR 61 Appendix D, in accordance with 61.96(b). The Dose Assessment Synopsis and Summary are attached.

VII. Permit Applicability

Based on potential emissions from this source during normal operations and standards established in 40 CFR 61 Subpart H, WVDP has determined that operation of this source will not result in potential emissions that necessitate a NESHAP Permit under 40 CFR 61 Subpart H.

Table 1 - 01-14 Building Maximum Potential Abated Emissions

Radionuclide	Remaining in 8D-2 (Ci)	Scaling Factor	Curies per drum	1000 Drums (Ci)	Physical State Factor	Inverse HEPA DF	Inverse HEPA DF	Max Potential Source Term (Ci)
C-14	2.004E+01	3.40E-05	3.396E-05	3.396E-02	1	1	1	3.40E-02
Sr-90	8.352E+05	1.42E+00	1.415E+00	1.415E+03	0.001	0.01	0.01	1.42E-04
Y-90	8.352E+05	1.42E+00	1.415E+00	1.415E+03	0.001	0.01	0.01	1.42E-04
I-129	3.150E-02	5.34E-08	5.337E-08	5.337E-05	1	1	1	5.34E-05
Cs-137	**5.902E+05**	**1.00E+00**	**1.000E+00**	**1.000E+03**	**0.001**	**0.01**	**0.01**	**1.00E-04**
Ba-137m	5.583E+05	9.46E-01	9.459E-01	9.459E+02	0.001	0.01	0.01	9.46E-05
Eu-154	8.865E+03	1.50E-02	1.502E-02	1.502E+01	0.001	0.01	0.01	1.50E-06
Pu-238	1.153E+03	1.95E-03	1.953E-03	1.953E+00	0.001	0.01	0.01	1.95E-07
Pu-239	2.372E+02	4.02E-04	4.019E-04	4.019E-01	0.001	0.01	0.01	4.02E-08
Pu-240	1.746E+02	2.96E-04	2.958E-04	2.958E-01	0.001	0.01	0.01	2.96E-08
Pu-241	8.853E+03	1.50E-02	1.500E-02	1.500E+01	0.001	0.01	0.01	1.50E-06
Am-241	7.692E+03	1.30E-02	1.303E-02	1.303E+01	0.001	0.01	0.01	1.30E-06
Am-242m	4.335E+01	7.34E-05	7.345E-05	7.345E-02	0.001	0.01	0.01	7.34E-09
Am-243	5.012E+01	8.49E-05	8.491E-05	8.491E-02	0.001	0.01	0.01	8.49E-09
Cm-243	3.944E+01	6.68E-05	6.682E-05	6.682E-02	0.001	0.01	0.01	6.68E-09
Cm-244	8.686E+02	1.47E-03	1.472E-03	1.472E+00	0.001	0.01	0.01	1.47E-07

CAP88-PC Synopsis and Summary Files

01-14 Building Ventilation System

C A P 8 8 - P C
Version 1.00
Clean Air Act Assessment Package - 1988

S Y N O P S I S R E P O R T

Non-Radon Individual Assessment

Apr 29, 1999 2:38 pm

Facility: West Valley Demonstration Project
Address: 10282 Rock Springs Road
City: West Valley
State: NY Zip: 14171-9799

Source Category: Ground Level ARP
Source Type: Stack
Emission Year: 1999

Comments: 01-14 Stack Appendix D Calculation

Dataset Name: 01-14 Appen D
Dataset Date: Apr 29, 1999 2:38 pm
Wind File: WNDFILES\5YRAV10M.WND

RADIONUCLIDE EMISSIONS DURING THE YEAR 1999

Nuclide	Class	Size	Source #1 Ci/y	TOTAL Ci/y
H-3	*	0.00	0.0E+00	0.0E+00
C-14	*	0.00	3.4E-02	3.4E-02
SR-90	D	1.00	1.4E-04	1.4E-04
Y-90	Y	1.00	1.4E-04	1.4E-04
I-129	D	1.00	5.3E-05	5.3E-05
CS-137	D	1.00	1.0E-04	1.0E-04
BA-137M	D	1.00	9.5E-05	9.5E-05
EU-154	W	1.00	1.5E-06	1.5E-06
PU-238	Y	1.00	1.9E-07	1.9E-07
PU-239	Y	1.00	4.0E-08	4.0E-08
PU-240	Y	1.00	3.0E-08	3.0E-08
PU-241	Y	1.00	1.5E-06	1.5E-06
AM-241	W	1.00	1.3E-06	1.3E-06
AM-242M	W	1.00	7.4E-09	7.4E-09
AM-243	W	1.00	8.5E-09	8.5E-09
CM-243	W	1.00	6.7E-09	6.7E-09
CM-244	W	1.00	1.5E-07	1.5E-07

SITE INFORMATION

Temperature:	8 degrees C
Precipitation:	102 cm/y
Mixing Height:	1000 m

SOURCE INFORMATION

Source Number:	1
Stack Height (m):	22.25
Diameter (m):	0.60
Plume Rise Momentum (m/s): (Exit Velocity)	1.62E+01

AGRICULTURAL DATA

	Vegetable	Milk	Meat
Fraction Home Produced:	0.700	0.399	0.442
Fraction From Assessment Area:	0.300	0.601	0.558
Fraction Imported:	0.000	0.000	0.000

Food Arrays were not generated for this run.
Default Values used.

DISTANCES USED FOR MAXIMUM INDIVIDUAL ASSESSMENT

1400 1800 1900 2100 2200 2300 2400 2500 2700 3000
3100 3300

C A P 8 8 - P C

Version 1.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Apr 29, 1999 2:38 pm

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Source Type: Stack
Emission Year: 1999

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Dataset Name: 01-14 Appen D
Dataset Date: Apr 29, 1999 2:38 pm
Wind File: WNDFILES\5YRAV10M.WND

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)						
Direction	1400	1800	1900	2100	2200	2300	2400
N	3.2E-03	2.5E-03	2.4E-03	2.1E-03	2.0E-03	1.9E-03	1.8E-03
NNW	2.8E-03	2.2E-03	2.0E-03	1.9E-03	1.8E-03	1.7E-03	1.6E-03
NW	1.6E-03	1.2E-03	1.2E-03	1.1E-03	1.0E-03	9.9E-04	9.6E-04
WNW	8.7E-04	7.3E-04	7.0E-04	6.6E-04	6.4E-04	6.3E-04	6.2E-04
W	7.6E-04	6.4E-04	6.2E-04	5.9E-04	5.8E-04	5.7E-04	5.6E-04
WSW	6.7E-04	5.8E-04	5.7E-04	5.4E-04	5.3E-04	5.3E-04	5.2E-04
SW	7.3E-04	6.2E-04	6.0E-04	5.7E-04	5.6E-04	5.5E-04	5.4E-04
SSW	7.1E-04	6.1E-04	5.9E-04	5.6E-04	5.5E-04	5.4E-04	5.3E-04
S	9.2E-04	7.4E-04	7.2E-04	6.7E-04	6.5E-04	6.3E-04	6.2E-04
SSE	1.9E-03	1.4E-03	1.3E-03	1.2E-03	1.1E-03	1.1E-03	1.0E-03
SE	3.1E-03	2.2E-03	2.1E-03	1.8E-03	1.7E-03	1.6E-03	1.5E-03
ESE	2.4E-03	1.7E-03	1.6E-03	1.4E-03	1.4E-03	1.3E-03	1.2E-03
E	1.9E-03	1.4E-03	1.3E-03	1.2E-03	1.2E-03	1.1E-03	1.1E-03
ENE	1.8E-03	1.4E-03	1.3E-03	1.2E-03	1.1E-03	1.1E-03	1.0E-03
NE	2.3E-03	1.8E-03	1.7E-03	1.5E-03	1.4E-03	1.3E-03	1.3E-03
NNE	2.6E-03	2.0E-03	1.9E-03	1.7E-03	1.6E-03	1.5E-03	1.5E-03

	Distance (m)				
Direction	2500	2700	3000	3100	3300
N	1.6E-03	1.6E-03	1.4E-03	1.4E-03	1.3E-03
NNW	1.5E-03	1.4E-03	1.3E-03	1.2E-03	1.2E-03
NW	9.3E-04	8.7E-04	8.0E-04	7.8E-04	7.4E-04
WNW	6.0E-04	5.8E-04	5.5E-04	5.5E-04	5.3E-04
W	5.5E-04	5.3E-04	5.1E-04	5.0E-04	4.9E-04
WSW	5.1E-04	5.0E-04	4.8E-04	4.8E-04	4.7E-04
SW	5.3E-04	5.2E-04	5.0E-04	4.9E-04	4.8E-04
SSW	5.2E-04	5.1E-04	4.9E-04	4.9E-04	4.8E-04
S	6.0E-04	5.8E-04	5.5E-04	5.4E-04	5.3E-04
SSE	9.8E-04	9.1E-04	8.3E-04	8.1E-04	7.7E-04
SE	1.5E-03	1.3E-03	1.2E-03	1.1E-03	1.1E-03
ESE	1.2E-03	1.1E-03	9.7E-04	9.4E-04	8.8E-04
E	1.0E-03	9.5E-04	8.6E-04	8.3E-04	7.9E-04
ENE	9.9E-04	9.2E-04	8.4E-04	8.2E-04	7.7E-04
NE	1.2E-03	1.1E-03	1.0E-03	9.9E-04	9.3E-04
NNE	1.4E-03	1.3E-03	1.2E-03	1.1E-03	1.1E-03

Shaded values indicate the location of the nearest residence in the designated direction

West Valley Nuclear Services Company, Inc.

P.O. Box 191 - 10282 Rock Springs Road
West Valley, New York 14171-0191
(716) 942-3235

Department : REGULATORY COMPLIANCE

Ext/MS : 4226/Z02

Memo # : IC:94:0132

Date : April 22, 1994

Subject : **Regarding the Relocation of the CSS Stack Monitors and Sampling System**

To : E. D. Picazo MS-Z05

cc : D. A. Baur MS-Z23
J. R. Fox MS-Z05
IC Letter Log MS-Z23
RC File MS-Z23
MRC (original) MS-50B

The present plan is to relocate the "speed space" containing the existing monitoring/sampling system to the CSS rooftop level. This system will be used until the permanent system in the 01-14 Building second floor is completed this fall.

Moving the speed space to the rooftop will enable WVDP to keep using the same system and a shorter sample line length. A temporary system (a Beta-CAM and air sampler) will be used during relocation of the speed space. This period will not exceed three days. Although the CSS ventilation will be running, CSS will not be processing during the period that the speed space system is off-line so to minimize effluent.

When CSS monitor/sampler system on the 01-14 second floor is ready for operation, a similar temporary system will be used during the transition period from the speed space to the permanent system.

Though regulatory approval is not required, the relocation of the CSS system has been discussed with the regional EPA office. A written summary of the relocation to the 01-14 second floor was provided to EPA. Based upon the above outlined plan, no regulatory concurrence for steps intermediate to the final relocation is deemed necessary at this point.

If you have any questions regarding this issue, please contact me at extension 4854. Thank you.

D. A. Baur
Regulatory Compliance

DAB:bnm

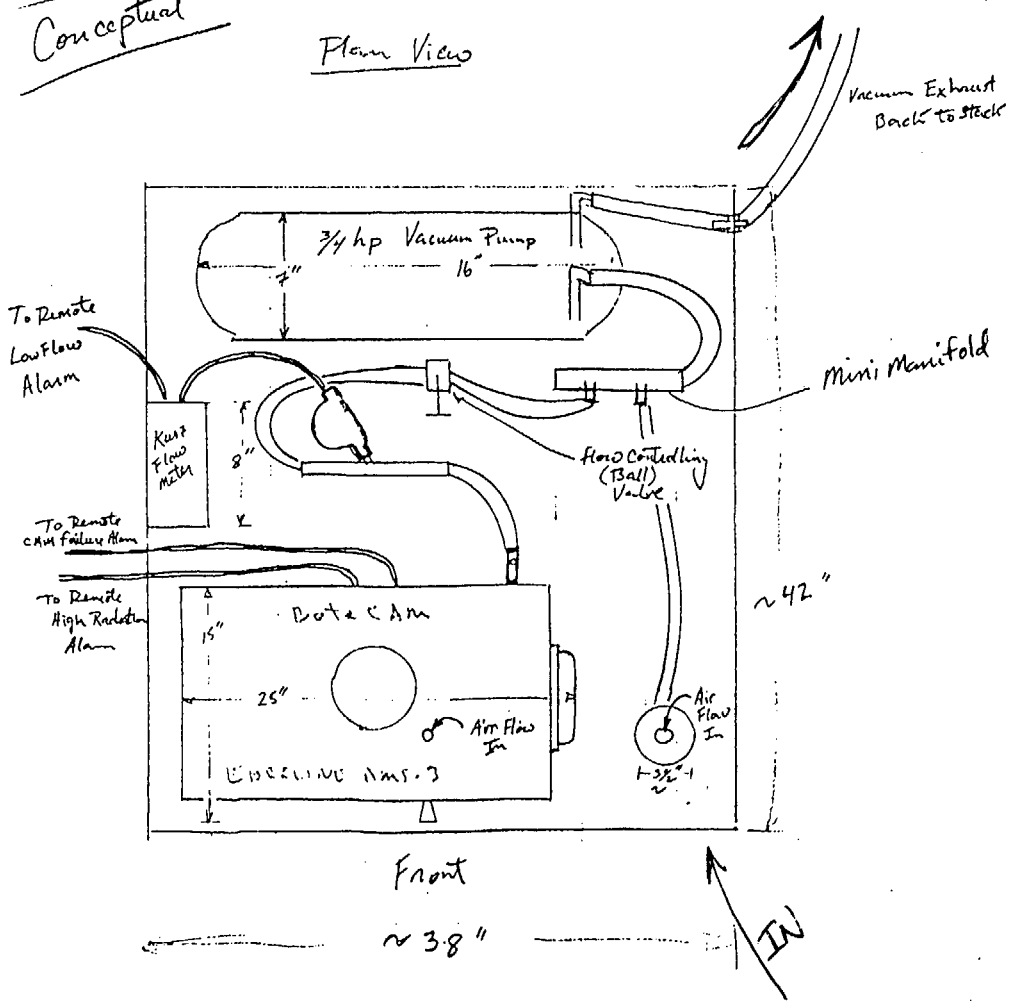
Not to Scale

Conceptual

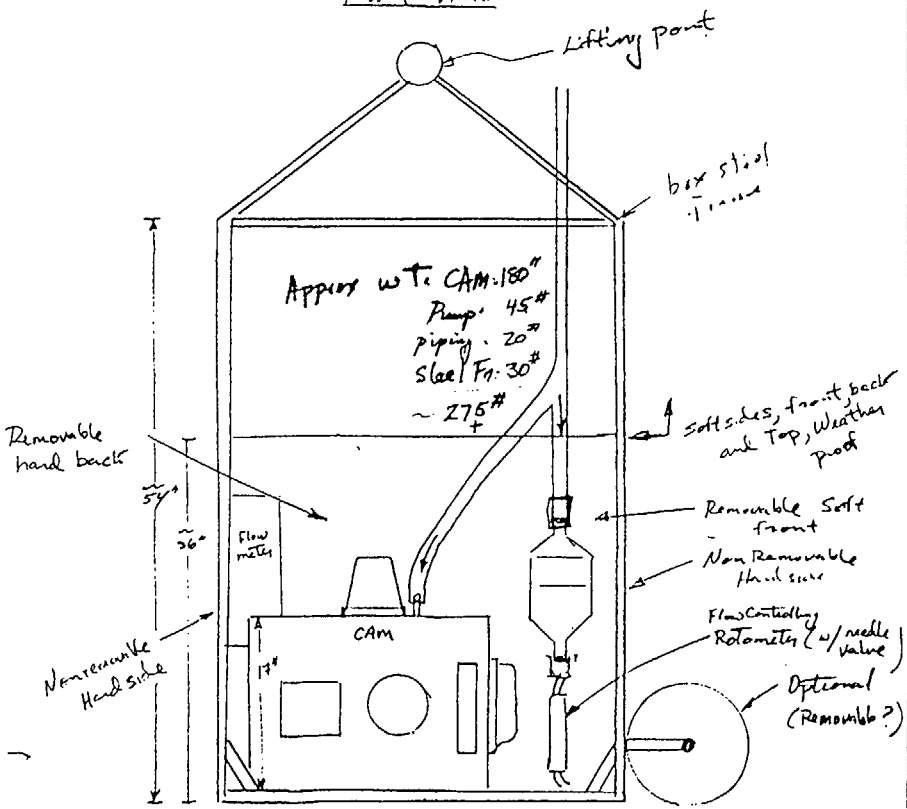
Portable Stack Monitoring Skid

Draft

Plan View



Front View

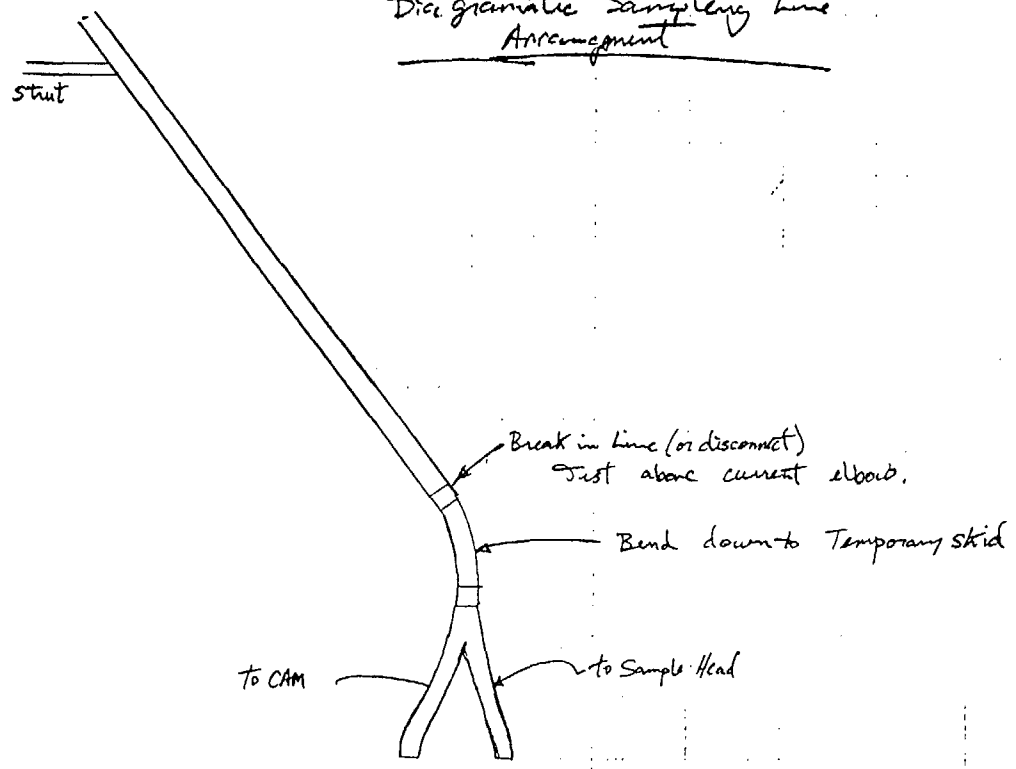


	West Valley Nuclear Services Co. Inc. West Valley, New York
TITLE	Portable Stack Monitoring Skid Rough Sketch
DATE 4/20/94	BY [illegible] CK'D [illegible]
SKETCH NO	RD-2041-[illegible] SHEET 1 OF 1

WV-1702

Draft

CSS
Diagramatic Sampling Line
Arrangement



West Valley Nuclear Services Co. Inc.
West Valley, New York

TITLE: CSS Sample line for Temporary Skid

DATE 4-22-94 BY: FoX CK'D

SKETCH NO: SHEET OF

WV-1702

ORGAN DOSE TO THE MAXIMALLY EXPOSED INDIVIDUAL

ORGAN	DOSE EQUIVALENT RATE TO THE ORGAN (mrem/y)
GONADS	6.4E-03
BREAST	7.6E-04
RED MARROW	5.3E-02
LUNGS	6.9E-02
THYROID	7.4E-04
ENDOSTEUM	5.2E-01
REMAINDER	2.2E-02
EFFECTIVE	3.9E-02

DOSE TO THE MAXIMALLY EXPOSED INDIVIDUAL BY PATHWAY FOR ALL RADIONUCLIDES

	EFFECTIVE DOSE EQUIVALENT (mrem/y)	DOSE EQUIVALENT TO THE ORGAN WITH THE HIGHEST DOSE ENDOSTEUM (mrem/y)
INGESTION	7.2E-03	1.1E-01
INHALATION	3.2E-02	4.1E-01
AIR IMMERSION	2.5E-10	3.5E-10
GROUND SURFACE	1.7E-05	2.1E-05
TOTAL:	3.9E-02	5.2E-01

DOSE TO THE MAXIMALLY EXPOSED INDIVIDUAL BY RADIONUCLIDE FOR ALL PATHWAYS

RADIONUCLIDE	EFFECTIVE DOSE EQUIVALENT (mrem/y)	DOSE EQUIVALENT TO THE ORGAN WITH THE HIGHEST DOSE ENDOSTEUM (mrem/y)
SR-90	2.5E-03	2.8E-02
U-234	7.2E-04	1.2E-03
PU-240	2.5E-03	2.8E-02
PU-241	2.7E-03	4.2E-02
PU-239	1.7E-02	1.9E-01
AM-241	1.3E-02	2.3E-01
TOTAL :	3.9E-02	5.2E-01

EFFECTIVE DOSE EQUIVALENT AS A FUNCTION OF DISTANCE IN THE DIRECTIONS OF THE MAXIMALLY EXPOSED INDIVIDUAL FOR ALL RADIONUCLIDES AND ALL PATHWAYS

DIRECTION : NORTH

DISTANCE (meters)	EFFECTIVE DOSE EQUIVALENT (mrem/y)
1900	3.9E-02
3000	2.3E-02
10000	5.7E-03
80000	1.8E-04

EFFECTIVE DOSE EQUIVALENT AS A FUNCTION OF ALL DISTANCES AND ALL DIRECTIONS FOR ALL RADIONUCLIDES AND ALL PATHWAYS

DIRECTIONS:	N	NNE	NE	ENE	E	ESE	SE	SSE
DISTANCE (METERS):								
1900	3.9E-02	3.0E-02	2.5E-02	1.7E-02	1.8E-02	2.3E-02	3.4E-02	1.9E-02
3000	2.3E-02	1.7E-02	1.4E-02	9.4E-03	9.9E-03	1.2E-02	1.7E-02	9.5E-03
10000	5.7E-03	3.6E-03	2.7E-03	1.7E-03	1.8E-03	2.0E-03	2.9E-03	1.6E-03
80000	1.8E-04	1.0E-04	7.0E-05	3.8E-05	3.7E-05	5.0E-05	9.0E-05	5.9E-05

	S	SSW	SW	WSW	W	WNW	NW	NNW
DISTANCE (METERS):								
1900	6.5E-03	3.6E-03	3.9E-03	3.2E-03	4.1E-03	5.4E-03	1.4E-02	3.0E-02
3000	3.3E-03	1.8E-03	1.9E-03	1.6E-03	2.2E-03	3.0E-03	7.6E-03	1.8E-02
10000	5.5E-04	3.1E-04	3.4E-04	2.7E-04	3.8E-04	5.6E-04	1.5E-03	4.4E-03
80000	1.8E-05	8.8E-06	1.0E-05	7.7E-06	1.0E-05	1.3E-05	4.1E-05	1.4E-04

DAMES & MOORE
WEST VALLEY NUCLEAR SERVICES CO., INC.
10282 ROCK SPRINGS ROAD, WEST VALLEY, NEW YORK 14171
(716) 942-4327 FAX: (716) 942-4067

June 07, 1994
D&M:94:SPV:JRF:03:0171

West Valley Nuclear Services Co., Inc.
10282 Rock Springs Road
P.O. Box 191
West Valley, NY 14171

Att: Mr. D. B. Sisson MS-53

Subj: Completion to Tasks Related to Relocation of CSS Stack Monitoring Speed Space on Roof of 01-14 Building, D&M Commitment Form dated 05/03/94. WVNS PO No. 19-68882-C-BM/ Work El.:03

Dear Mr. Sisson:

The attached copy of completed work order #CSS-9401191-I/WO serves to document that all tasks outlined on the D&M Commitment Definition Form, dated 05-03-94, have been satisfactorily accomplished. To date, approximately $15,972 in D&M effort has been accrued to this task versus the $16,261 originally budgeted through the Commitment Definition Form. Labor that has been accrued to pre-existing D&M related cost accounts will be backed out and charged to the appropriate Construction Dept. account.

Please note that continued Dames & Moore support for moving stack monitoring equipment down to the second floor of the 01-14 Building will be delineated on a commitment definition form to come. Please contact me in Springville at 592-0026 if you have any questions.

Very truly yours,
DAMES & MOORE

For E.D Picazo, Manager
Environmental Monitoring

Larry M. Coco
Project Manager

LMC/RWO/EDP/RLS/tlf

cc:

S. J. Barnard	WVNS	MS-53
D. A. Baur	WVNS	MS-Z23
H. W. Morse	WVNS	MS-39
A. S. Nagel	WVNS	MS-Z-23
E. M. Mazeau*	WVNS	MS-B1C
S. G. Schneider	WVNS	MS-Z23
R. L. Schubert	D&M	MS-Z-05
P. N. Tandon	WVNS	MS-53
R. P. Vitko	WVNS	MS-48
Job File	D&M	MS-Z-05

*W/attachments

TLF0053:SPV-004

Work Orders . Shop Orders Only (Oth. s Use J-2)

J1 - WORK AUTHORIZATION

1. Work Control Number (Used By WCC) C 5 5 - 9 4 0 1 1 9 1 - F/W 0

2. Originator

Name	Date	Organization	Mailstop	Extension
M.J. Saraf	05-06-94	Environmental Laboratory	MS-61A	X4858

3. Charge No. (Labor) WH 4710001 (M & S) /WH

4. System 70 9/5 5-23-94

5. Equip. No. E | I | V | N/A

6. Location Roof 01-14

7. Performance Code
A. X Special Preparation
B. Normal Preparation
MAY 5 1 94
MCB

System:
0 ___ May be shut down
1 ___ Must be shut down
2 X Must be operating
3 ___ N/A

Equipment:
0 X May be shut down
1 ___ Must be shut down
2 ___ Must be operating
3 ___ N/A

8. Estimated Manhours

ACTIVITY	MH	CORRECTIVE MAINTENANCE
Ops		Yes ___
Maint		No X
QA		
RS Tech		
ELAB	as required 48	

9. Dwg/SK: Yes ___ No ___ Attached X

10. Docs/Dwgs: Yes ___ No X Required Revs ECN No. ___

11. Required Document(s): As-Built ___ N/A D-Spec ___

12. Type of Work Item: WO

13. Internal X External ___

14. Pri 3 N

15. Document Ref. No. N/A

16. Qual. Level C

17. Safety Class N

18. Est. Accumulated Dose (100 mRem): Below X Above ___ N/A

19. Eng. Approval Required: Yes ___ No X

20. IWP Required? Yes ___ No X
RWP Required? Yes X No ___

21. High Consequence Lift? Yes ___ No
If yes, rigging sketch required.

22. QA Inspection Required: Yes ___ No X

23. Welding or Spec Process Req.? Yes ___ No X Cite ___

24. Special Qualification Req.? Yes X No X 5-23-94

Note: A Yes to any of item 21 thr requires a QA approval.

25. Quality Related Material Req.? Yes X No ___

26. Safety Review Screen: Completed and Attached X N/A ___

27. Environmental Checklist: Yes ___ No X Attached ___

28. Reqd. Finish Date ~~05-20-94~~ 5-23-94 5-31-94

29. HLW ___ Yes ___ No X N/A Is HLW Screening Form Attached? ___ Yes ___ No

30. Originator's Manager Approval/Date D.M. Scalise 5/23/94

31. TITLE: Operation of CSS Air Effluent Temporary Monitoring Skid

OBJECTIVE: Provide for operation of temporary stack monitoring skid attached to CSS stack effluent sampling line. Skid to be used during interim period of up to 4 days (max.) while SPEED Space is being relocated to upper roof of 01-14 building from previous location.

___ FAB.
___ INSTALL
___ MOD./RE
___ INSP.
___ TEST
___ CALIB.

32. Description of Work

WCC 5-23-94

Task	Description	Signature/Date
1.0	General Equipment Description: Temporary monitoring skid composed of Eberline beta CAM as monitoring leg and standard sample head on sampling leg connected to supply header from CSS stack sampling line. Local alarm annuciation within the skid for CAM high radiation and failure and low flow. Low flow condition detected using Kurz flow element attached to flow element attached to flow meter/computer. All equipment above,	

33. Responsible Work Group: Environmental Lab

34. Work Group Supervisor: S.L Conklin:

35. Work Group Manager: D.M. Scalise:

36. Review/Approvals

WORK GROUP	SIGNATURE/DATE	WORK GROUP	SIGNATURE/DATE
CSS Ops	5/24/94	Ind. Hyg. & Safety	5/
Maintenance	N/A	Security	N/A
Radiation & Safety	5/23/94	Main Plant Ops	N/A
Quality Assurance	Olimpia Torres 5/24/94	Environ. Affairs	5/

37. Documentation of Work Completion

Work Group Supervisor — 5/24/94 Date

Originator — 5-31-94 Date

JiA-Work (Continuation)	1. Work Control Number □□□□-□□□□□□□-□□□□□

DESCRIPTION OF WORK

Title: Operation of CSS Air Effluent Temporary Monitoring Skid (con't)

TASK	DESCRIPTION	SIGNATURE/DAT
1.0 (con't)	including vacuum pump, located within Unistrut frame.	
2.0	Requirement:	
	The CSS stack monitoring equipment must be able to provide for measurement of alpha and beta radioactivity while the CSS ventilation is exhausting to the environment per OSR-GP-1.	
3.0	General Conditions for W.O. Implementation:	

	- CSS ventillation is operating.
	- CSS is not processing.
	- Temporary skid components have been calibrated in accordance with conditions specified in EM-8 and RC-IOC-19.
	- Contractor personnel have provided all necessary connections for:
	  - Sample line to supply header.
	  - Skid exhaust to return line.
	  - 120 VAC (2-20 amp) circuits provided to inside skid.
	  - Intercom line to CSS Control Room from skid.
	- An open intercom line shall be established from a receiver inside the skid to a continuously occupied space (CSS Control Room) where peronnel can monitor production of any local skid alarms.
	- CSS operations personnel shall perform frequent (every 30 min) inspections to confirm continued equipment operability.	

	This shall be documented in the CSS Operations Logbook. OBT 5-24-94	

TASK	DESCRIPTION	SIGNATURE/DAT
4.0	Procedure:	
4.1	System Startup: ***Note: All access to the area shall be in accordance with requirements indicated on construction area signs. CSS operations shall be informed prior to entry.	
4.1.1	Inform CSS and MPO of intended system startup. and QA x2108 05/24/94	
4.1.2	Disconnect sample head from sampling leg using quick disconnects.	
4.1.3	Install air particulate glass fiber and charcoal filters in sample head and reconnect to sample leg.	
4.1.4	Remove CAM filter holder from CAM. Install air partculate glass fiber filter in holder and re-install in CAM.	
4.1.5	Turn CAM on.	
4.1.6	Confirm flow meter/computer on.	
4.1.7	Confirm vacuum pump on.	
4.1.8	Adjust flow though CAM using metering valve connected to vacuum hose coming out back of the CAM (see diagram, Attachment A), to a maximum of 80 LPM as indicated on CAM rotometer.	
4.1.9	Reset integrated flow. Select flow rate indication mode on Kurz flowmeter/computer.	
4.1.10	Adjust flow through sampling leg to a maximum of 100 LPM using metering valve connected downstream of flow element (see diagram, Attachment A), as indicated on Kurz flowmeter.	
+ 4.1.11	Clear all existing alarms. Confirm local and/or remote alarm operability for high radiation, CAM failure and low flow.	MJS 5-2 5-2
4.2	Alarm Conditions:	
4.2.1	Upon the activation of an alarm condition the CSS Shift personnel shall notify the appropriate Environmental Laboratory personnel according to the following order of call.	

D.M. Scalise	X4160/4124	Home: 648-8014
M.J. Saraf	X4124	Home: 632-0691
G.P. Sowyrda	X4124	Home: 674-3712
M.P. Pendl	X4124	Home: 592-7092

TASK	DESCRIPTION	SIGNATURE/DATE
4.2.2	The alarm conditions are as follows: 1) Beta CAM high activity will alarm if the observed count rate meets or exceeds 10,000 cpm per SOP 70-30. The red beacon will light and bell will sound locally on the CAM and the bell will be heard over the remote intercom. 2) Beta CAM failure will alarm if there is detector damage. The red "FAIL" light will light on the CAM and a continuous buzzer alarm will sound locally and will be heard remotely via the intercom. 3) Sampler low flow will alarm if the indicated flow rate on the Kurz mass flow meter meets or falls below 0.080 SCMM. A pulsing buzzer will sound locally and will be heard via the intercom. 4) Loss of power to the skid as a whole will also be observable by CSS Control Room personnel remotely through lack of vacuum pump sound observable over the intercom. Routine inspections of the skid by CSS personnel should also allow observation of this condition.	
4.3	Sample Collection:	
4.3.1	Obtain RWP for sample collection.	
4.3.2	Inform CSS Control Room operator of filter changeout.	
4.3.3	Record flow rate through CAM from rotometer onto CAM filter collection bag.	
4.3.4	Record flow rate through sampling leg from Kurz meter onto sample filter bag. Also record totalized flow.	
4.3.5	Collect CAM filter and record time/date, collector and location on filter bag.	
4.3.6	Collect sampler filters (glass fiber and charcoal and record time/date, collector and location on filter bag.	
4.3.7	Reinstall clean filters.	
4.3.8	Return all filters collected to Environmental LAb for logging into LIMS and subsequent analysis. Note: Inform QA x2108 prior to performing this step. OBT 5-24-94	

J1A-Work	1. k Control Number 940191
(Continuation)	☐☐☐☐-☐☐☐☐☐☐☐-☐☐☐☐☐

DESCRIPTION OF WORK

Title: Operation of CSS Air Effluent Temporary Monitoring Skid (con't)

TASK	DESCRIPTION	SIGNATURE/DAT
	Unadjusted	

3. BRIEF DESCRIPTION OF COMPLETED WORK: → running for 40 min

5-25-94 11.45 Skid Flows (skid online) sampling .105 scmm Kurz ~ 75 LPM Rotometer

Stack

5-26-94 09.05 SPEED Space (in new location) back online

Actual Hours Worked:

ACTIVITY	MH
Ops	
Maint	
QA	
RS Tech	

→ Stack sampling was off line from ~ 10:30 to 11:00 5-25-94 maybe less — For switch to Temporary Skid.

→ Stack sampling was off line from ~ 08:55 to 09:05 on 5-26-94 — For switch back to SPEED space in new location.

Skid Status: on 5-25-94 @ 16:00 Kurz Flow = .103 scmm, C&M Rotometer = 75 LPM (unconnected)

Skid Status: on 5-26-94 @ 08:20 (before switch back to Speed space) after running all night (no problems with skid during night) (no alarms)

Kurz (sampling leg) flows = .1016 scmm (unadjusted) / C&M Rotometer = 75 LPM

→ Filters pulled from skid @ Env. Lab by M. J. Sarnet. 5-26-94 11:45

- Turned over to SIMS group.

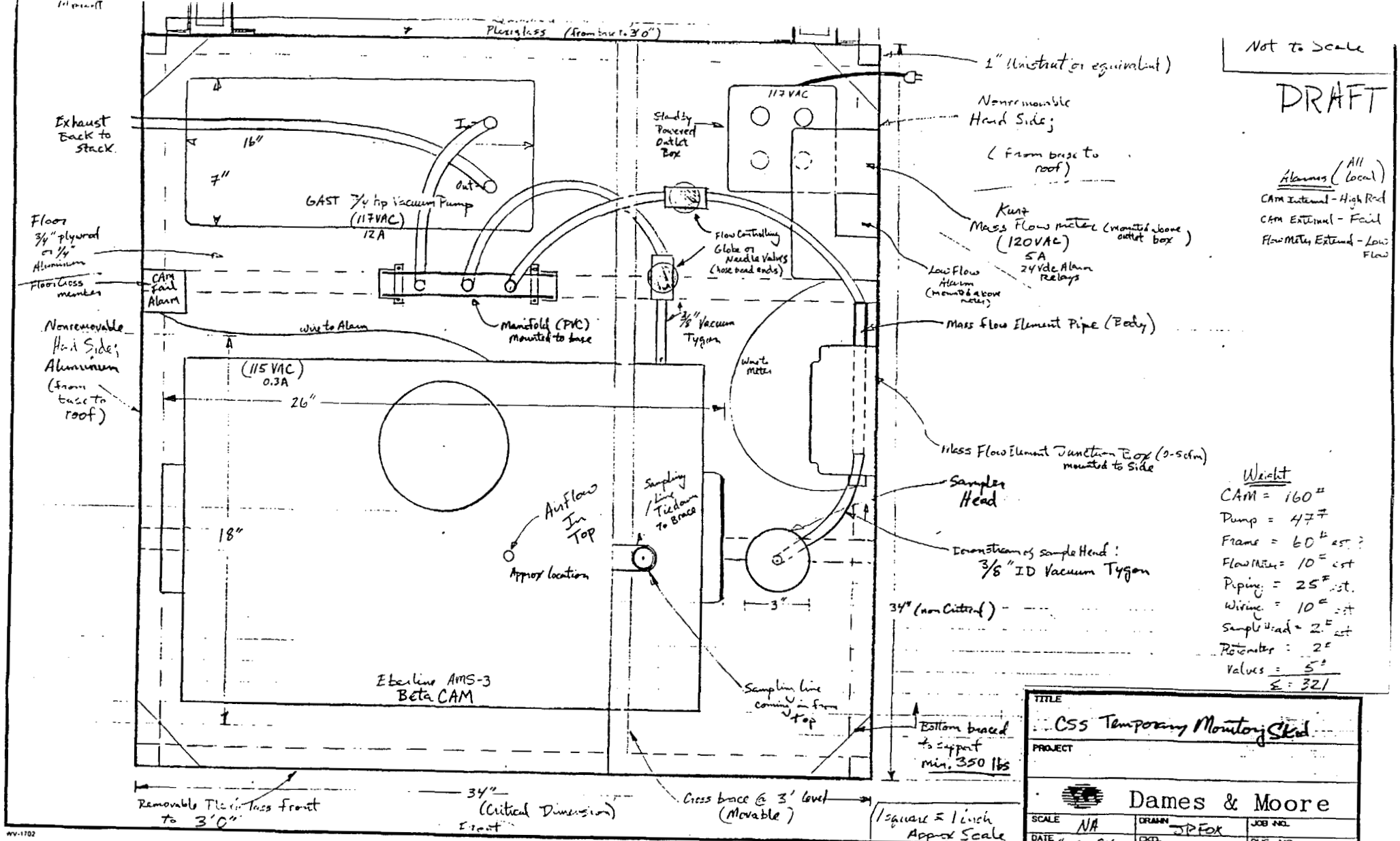
→ Total Sampling Leg flow = 136.857 SCM. Read by JR Fox on Kunz

→ Inspection of CAM chart showed no unusual rise in activity during period of skid operation

- See attached Calibration information
- See attached CAM chart copy

5-26-94

Reviewed - MJS 2:07. 5069y/1540


Not to Scale
DRAFT
Plexiglass (from base to 3'0")
1" Unistrut or equivalent
Nonremovable Head Side; (From base to roof)
117 VAC
Standby Powered Outlet Box
Exhaust Back to Stack
16"
7"
In
Out
GAST 3/4 hp Vacuum Pump (117VAC) 12A
Floor 3/4" plywood or 1/4" Aluminum
Floor Cross member
CAM Fail Alarm
Flow Controlling Globe or Needle Valves (hose bead ends)
Kurz Mass Flow meter (mounted above outlet box) (120VAC) 5A 24Vdc Alarm Relays
Low Flow Alarm (mounted above meter)
Manifold (PVC) mounted to base
3/8" Vacuum Tygon
wire to Alarm
Mass Flow Element Pipe (Body)
wire to Meter
(115 VAC) 0.3A
26"
Nonremovable Head Side; Aluminum (from base to roof)
Mass Flow Element Junction Box (0-5cfm) mounted to Side
Sampling Line Tiedown to Brace
Sampler Head
Air Flow In Top
Approx location
18"
Downstream of sample Head: 3/8" ID Vacuum Tygon
3"
34" (non Critical)
Eberline AMS-3 Beta CAM
Sampling line coming from Top
Bottom braced to support min. 350 lbs
Removable Plexiglass front to 3'0"
34" (Critical Dimension)
Front
Cross brace @ 3' level (Movable)
1 square = 1 inch Approx Scale
Alarms (All local)
CAM Internal - High Rad
CAM External - Fail
Flow Meter Extend - Low Flow
Weight
CAM = 160#
Pump = 47#
Frame = 60# est
Flow Meter = 10# est
Piping = 25# est.
Wiring = 10# est
Sample Head = 2# est
Rotometer = 2#
Values = 5#
Σ = 321
TITLE
CSS Temporary Monitoring Sled
PROJECT
Dames & Moore
SCALE NA
DRAWN JP FOX
JOB NO.
DATE 4-25-94
CKD.
DWG. NO.
WV-1702

Safety Review Screen

USE BLACK INK OR TYPE

. Responsibility | A. Date: 5-23-94

B.1 Title of Proposed Change or Discovery:
Operation of Temporary Monitoring Skid During Relocation of CSS SPEED Space (Roof of 01-14)

B.2 Reference Document (affected document - e.g. work order no. " ") 9401191
Original SOP for operation of Stack Monitors in SPEED Space is SOP 70-30.
OSR/6P-1 mandates measurement of alpha and beta radioactivity

C. Cognizant Department: Environmental Laboratory

D. Cognizant Manager (Typed/Printed): D. M. Scalise

E. Prepared by (Typed/Printed): J. R. Fox / C. M. Wiecinski

II. Safety Exclusion Screen (Complete either A or B, not both)

A. Discovery Process (Occurrence Reports, Non Conformance Reports, and RCA's only)

1. Does the facility configuration or operation differ from that described in the approved safety analysis or authorization basis? ☐ No ☐ Yes ☐ Maybe

2. Is there an error, omission, or inadequacy in the safety analysis which could reduce margin of safety in the SAR or an OSR/TSR? ☐ No ☐ Yes ☐ Maybe

B. Change Process:

1. Will the proposed change be a change in a facility described in an approved safety analysis? ☒ No ☐ Yes ☐ Mayb

2. Will the proposed change make changes in procedures described in the approved safety analysis? ☒ No ☐ Yes ☐ Mayb

3. Will the proposed change involve tests or experiments affecting a facility or operation described in the approved safety analysis? ☒ No ☐ Yes ☐ Mayb

If any of the questions in A or B above were answered with "Yes" or "Maybe" then complete the remainder of the Safety Review Screen.

If all of the questions in A or B above were answered "No" then provide the basis in Section V, sign the form where indicated, and attach this copy with the change or discovery documentation per the governing procedure (see WV-914, Att. B).

III. Safety Research and Conclusions (attach additional pages if needed):

IV. Safety Questions:

A. Will the probability of an accident previously evaluated in approved safety analyses be increased? ☐ No ☐ Yes ☐ Maybe

B. Will the consequences of an accident previously evaluated in the approved safety analyses be increased? ☐ No ☐ Yes ☐ Maybe

C. Will the probability of a malfunction of equipment important to safety be increased? ☐ No ☐ Yes ☐ Maybe

D. Will the consequences of a malfunction of equipment important to safety be increased? ☐ No ☐ Yes ☐ Maybe

E. Will the possibility of an accident of a different type than any previously evaluated in approved safety analyses be created? ☐ No ☐ Yes ☐ Maybe

F. Will the possibility of a malfunction of a different type than any previously evaluated in the approved safety analyses be created? ☐ No ☐ Yes ☐ Maybe

G. Will the margin of safety as defined in the basis for any technical specification or safety analysis report be reduced? ☐ No ☐ Yes ☐ Maybe

H. Name (Typed/Printed) and Signature:

1. _____ _____
Safety Reviewer Date

2. _____ _____
Independent Reviewer Date

V. Basis (attach additional pages as needed):
Maintaining equivalent ~~monitoring~~ measurement capability per SAR. J.L.F 5-23-94

VI. Manager Recommendation and Signoff

A. Recommendation (Either 1, 2, or 3 shall be answered "Yes"):

1. It is recommended that the change or discovery is not a potential USQ. [✓] Yes

2. It is recommended that the change or discovery is a potential USQ to be transmitted to the Radiation and Safety Committee for further review. [ ] Yes

3. Terminate the proposed change activity. [ ] Yes

B. Signoff:

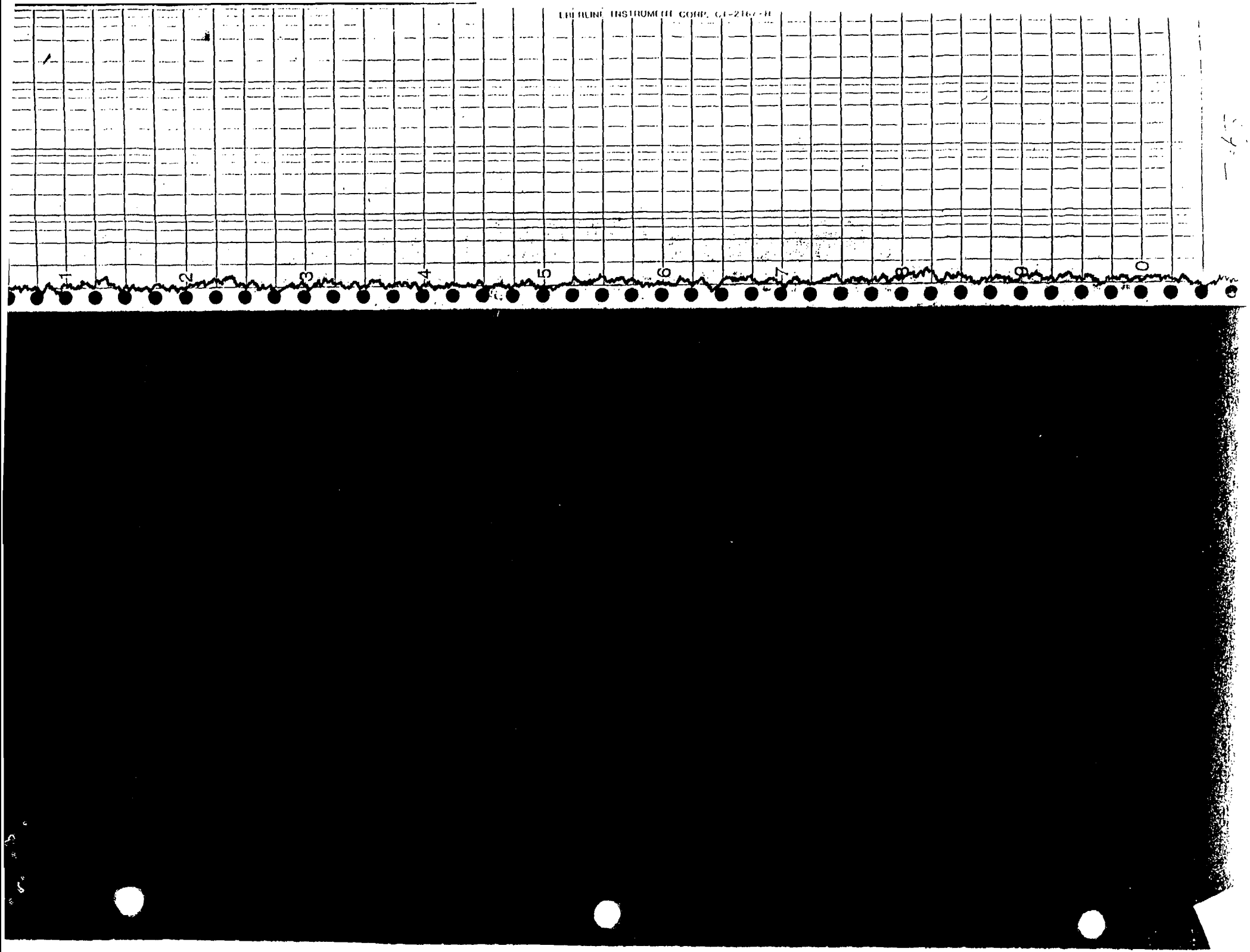
1. C.W. Wade / Mitch P. Reed 5-23-94 / 5/23/94
Cognizant Manager Date

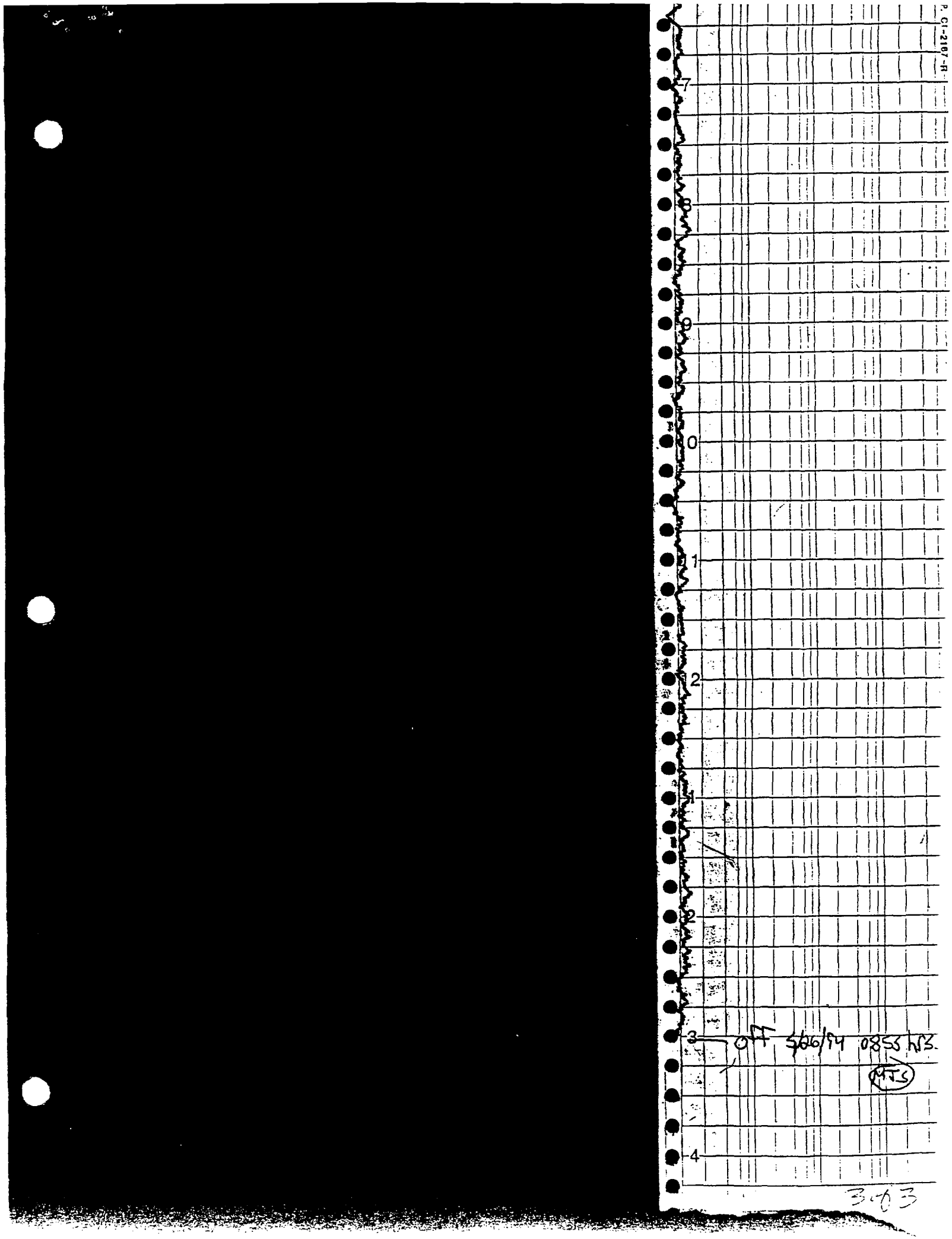
VII. Radiation and Safety Committee Recommendation:

Recommendation (circle choice): Not USQ Probable USQ

_____ _____
Chairman, R&SC Date

CSS temp Skid B CAM
start-up 5/25/94 @ 1100 hrs.
MJS




P. CI-2167-R
7
8
9
0
1
2
3
4
off 5/6/14 0855 hrs.
RJS
3 of 3

CERTIFICATE OF CALIBRATION FOR AIR MONITOR ROTAMETER

Location CSS Temporary Monitoring Sta Stationary Sampler I.D. Series 155 Kwz Mass

Rotameter Manufacturer Kwz Model Series 155 Serial Number AJ1139

Calibrator Manufacturer Kwz Model 544 Serial Number MP-1858

Sampling Train Schematic (Actual):

Pump → Flow Sensor → Sampler Head → Kwz Cal. → Atmosphere

Rotameter Reading	Calibrator Reading
110.21 SCMM	105.0 LPM
99.80	97.5
92.53	90.0
82.94	82.0
121.60	115.0
128.50	117.0

Error Factor

Calibrator 2.5 %

Meter Scale 0.5 %

Total Volume — %

Other — %

Correction Factor At 119.0 lpm - 0.926

Cumulative Error Factor At 119.0 lpm - 2.5%

Comments _____

Calibration Sticker Attached 5-27-94 Correction Factor Poster 0.926

Date 5-23-94 Calibrator's Signature [signature]

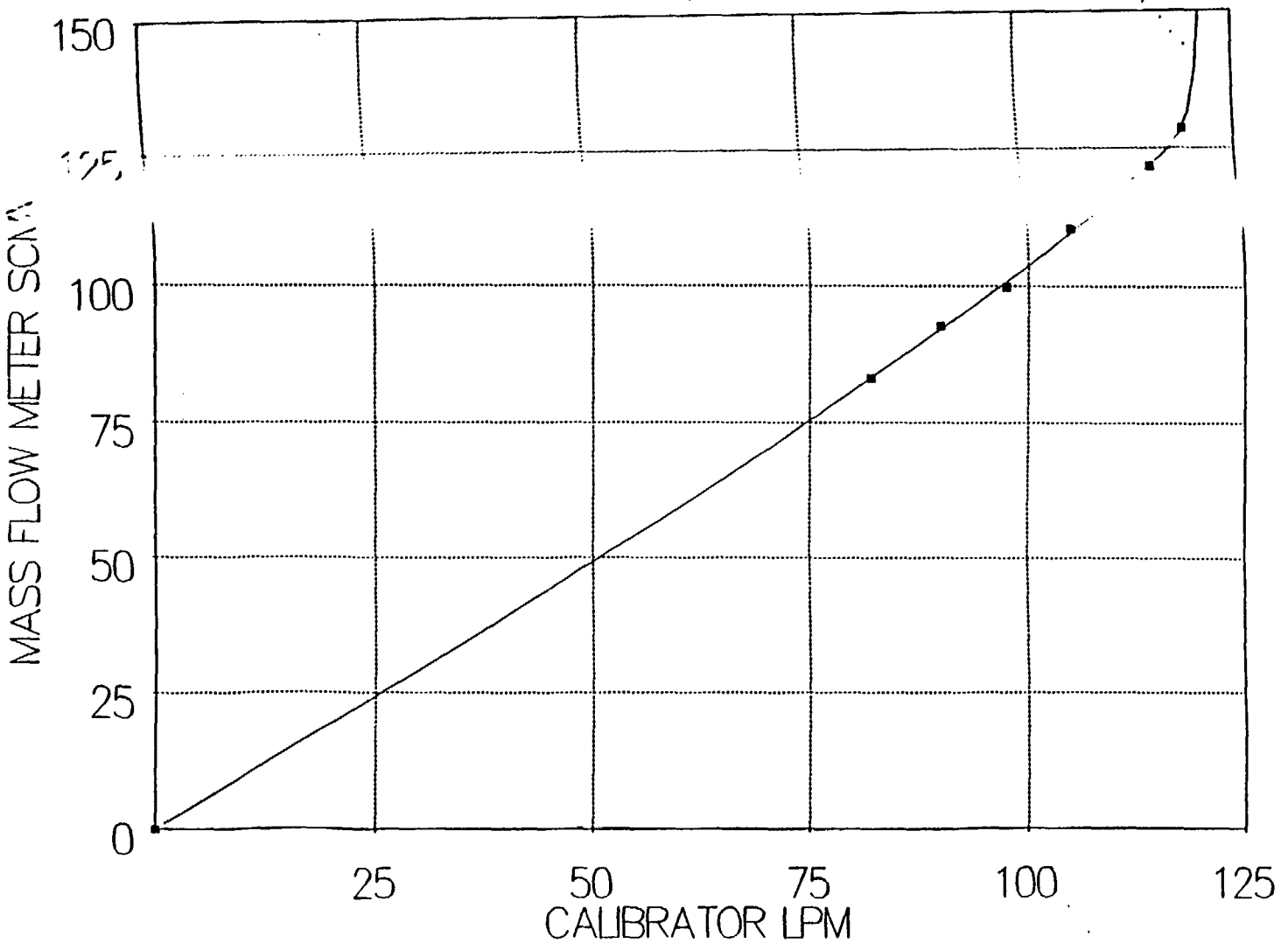
Calculations: OK CGPS 5-24-

CSS TEMP MONITORING SKID MFM CAL 5/94

1 Eqn 168 $y=(a+bx+cx^3+dexp(x))$ r2=0.999865084

a=-0.00285978 b=0.965789

c=7.02348E-06, d=3.6163E-52



CERTIFICATE OF CALIBRATION FOR AIR MONITOR ROTAMETER

Location CSS Temporary Monitoring Std Stationary Sampler I.D. Station 3A Beta CAM

Rotameter Manufacturer Dwyer Model 10 LPM/Max Serial Number EEL1

Calibrator Manufacturer Kurz Model 454 Serial Number MP-1858

Sampling Train Schematic (Actual):

Pump → 3A β CAM → Rotameter → Inlet → Kurz Cal.

Rotameter Reading	Calibrator Reading
20.0 LPM	17.0 LPM
30.0	29.0
40.0	38.0
50.0	45.0
60.0	~~60.0~~ 57.0
70.0	64.0
75.0	67.0

Error Factor

Calibrator 2.5 %

Meter Scale 0.5 %

Total Volume — %

Other — %

Correction Factor At 67.0 lpm - 0.853

Cumulative Error Factor At 67.0 lpm - 2.5%

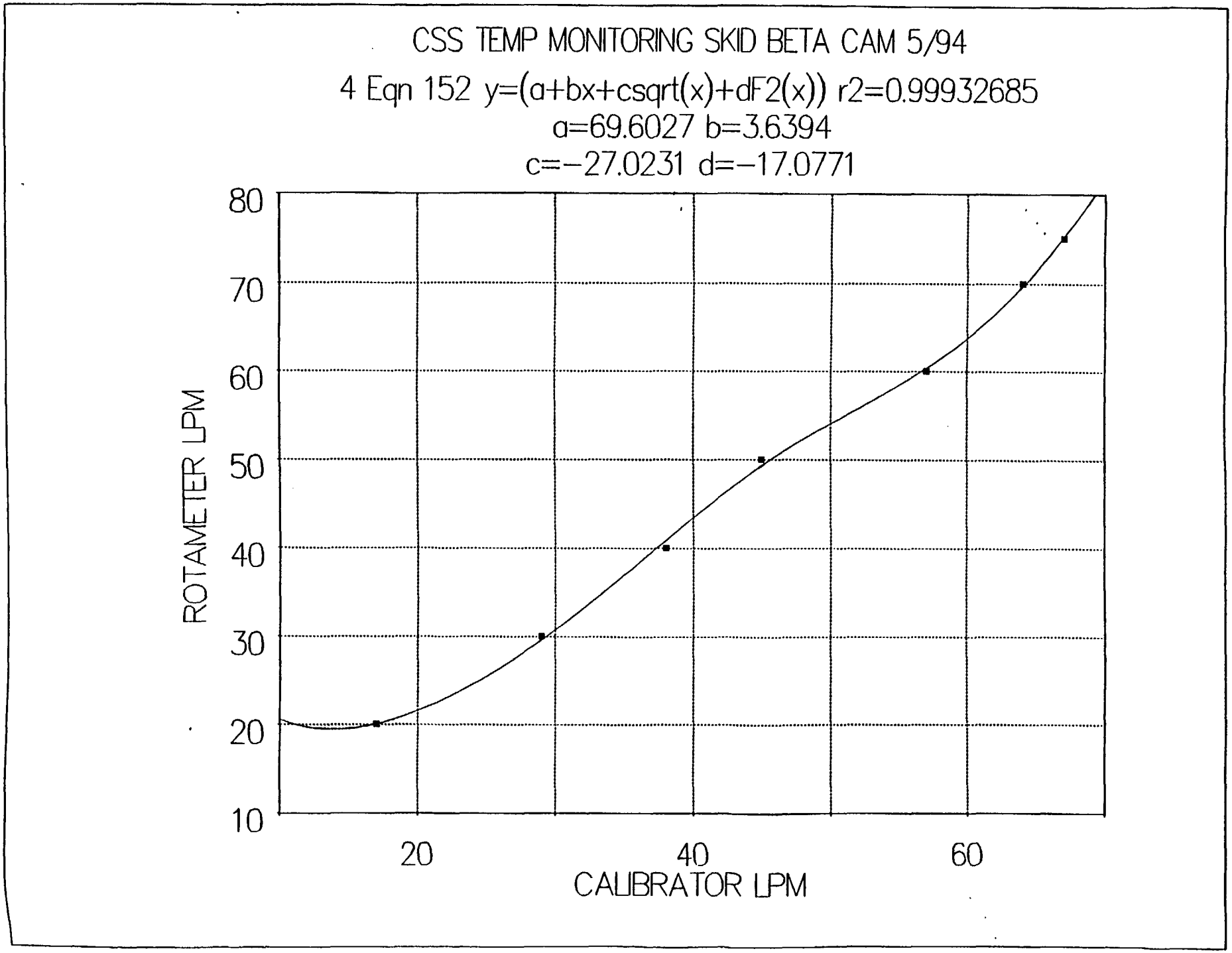
Comments _____

Calibration Sticker Attached 5-23-94 Correction Factor Poster 0.853

Date 5-23-94 Calibrator's Signature MJ

Calculations:

SK GPS 5-24-94


CSS TEMP MONITORING SKID BETA CAM 5/94
4 Eqn 152 y=(a+bx+csqrt(x)+dF2(x)) r2=0.99932685
a=69.6027 b=3.6394
c=-27.0231 d=-17.0771
ROTAMETER LPM
80
70
60
50
40
30
20
10
20
40
60
CALIBRATOR LPM

CERTIFICATE OF VACUUM LEAK-TESTING

Location CSS Temporary Monitoring Skid Stationary Sampler I.D. Beta CAM

Sampling Train Schematic (Actual):

Pump → Leak Test Rig → Beta CAM → Inlet

Temperature — Source —

Manometer Reading During Test 5" Hg

Air Particulate Train (PASS/FAIL)
Tritium Sampling Train (PASS/FAIL)

Corrective Action Taken (Describe Fully):

None Required

Calibrator's Signature/Date M J Saf 5-23-94

NOTE: The maximum acceptable leak rate for the Air Particulat Sampling Train is 500 cc/min.
The maximum acceptable leak rate for the Tritium Samplin Train is 8 cc/min.

CERTIFICATE OF VACUUM LEAK-TESTING

Location CSS Temporary Monitoring Sta **Stationary Sampler I.D.** Particulate Sampling T

Sampling Train Schematic (Actual):

Pump-Leak Test Rig → Sampler Head → Flow Element → Manifold

Temperature — **Source** —

Manometer Reading During Test 5" H_2O

Air Particulate Train (PASS/FAIL)
Tritium Sampling Train (PASS/FAIL)

Corrective Action Taken (Describe Fully):

None Required

Calibrator's Signature/Date 1/5-23-07

NOTE: The maximum acceptable leak rate for the Air Particulate Sampling Train is 500 cc/min.
The maximum acceptable leak rate for the Tritium Sampling Train is 8 cc/min.

CERTIFICATE OF VACUUM LEAK-TESTING

Location CSS Temporary Monitoring Skid Stationary Sampler I.D. Manifold

Sampling Train Schematic (Actual):

Pump → Leak Test Rig → Manifold

Temperature — Source —

Manometer Reading During Test 5" Hg

Air Particulate Train (PASS/FAIL)
Tritium Sampling Train (PASS/FAIL)

Corrective Action Taken (Describe Fully):

None Required

Calibrator's Signature/Date [signature] 5-23-94

NOTE: The maximum acceptable leak rate for the Air Particulate Sampling Train is 500 cc/min.
The maximum acceptable leak rate for the Tritium Sampling Train is 8 cc/min.

Eberline *A subsidiary of* ***Thermo Instrument*** *Systems Inc.*

CERTIFICATION OF CALIBRATION

Instrument AMS-3A

Serial No. 2401

Type of Source Eberline MP-2S/N 290/289

TL 99 254/30600 cpm

Range	Calibration Point	Reading
10-100K cpm @ 20 cpm	20 cpm	20 cpm
10-100K cpm @ 100K cpm	100K cpm	100K cpm
10-100K cpm @ 40 cpm	40 cpm ± 10%	40 cpm
10-100K cpm @ 400 cpm	400 cpm ± 10%	400 cpm
10-100K cpm @ 4K cpm	4K cpm ± 10%	4K cpm
10-100K cpm @ 40K cpm	40K cpm ± 10%	40K cpm
Efficiency	9486 cpm	31 %
Air Flow W/60 LPM In		52 LPM

Calibration sources used have calibration traceable to the National Institute Of Standards And Technology.

Date 1991 Signature

EIC 35

P.O.# 19-51035-N-EK

40 CFR Part 61
National Emission Standards
for Hazardous Air Pollutants

CLEAN AIR ACT COMPLIANCE REPORT
(Version 3.0 November 1989)

Facility: West Valley Demonstration Project (DOE)

Address: Rock Springs Road
West Valley , NY. 14171
Annual Assessment for Year: 1989
Date Submitted: 7/30/90

Comments: Dose Assessment for CSS (no emissions control equipment)

Prepared By:

Name: Ernesto R. Faillace, D.Eng.
Title: Staff Nuclear Engineer
Phone #: (716) 942-4471

Prepared for:
U.S. Environmental Protection Agency
Office of Radiation Programs
Washington, D.C. 20460

West Valley
Nuclear Services Company
Incorporated

P.O. Box 191
West Valley, New York 14171-0191

WR:92:0024

Z-23

March 12, 1992

Mr. Paul Giardina
Radiation Protection Manager
United States Environmental
Protection Agency
Region II
26 Federal Plaza
New York, New York 10278

Dear Mr. Giardina:

Attention: J. E. Magruder

SUBJECT: Air Emission Dose Commitment Models for the Liquid Waste Treatment System (LWTS), and the Cement Solidification System (CSS)

References: 1) Letter FJ:91:0363, G. G. Baker to P. Giardina, "Air Emission Dose Commitment Models for 8D-4 Steam Jet Removal and Riser Modifications Project; Liquid Waste Treatment System (LWTS) Evaporator Cleaning Project; and 8D-2 Sludge Mobilization and Wash System Process," dated October 16, 1991

2) Letter FJ:91:0258, G. G. Baker to P. Giardina, "Minutes from May 29, 1991, U. S. Environmental Protection Agency (EPA) National Emission Standard for Hazardous Air Pollutants (NESHAP) Annual Inspection, " dated August 8, 1991.

As discussed in Reference 1, efforts are currently underway in the sludge mobilization and wash system (SMWS) process. The SMWS process is washing the soluble salts from the high-level waste sludge in Tank 8D-2. The Supernatant Treatment System (STS) will be used to treat the wash solutions such that the effluent wash water can be concentrated in the Liquid Waste Treatment System (LWTS) and solidified in a cemented waste form in the Cement Solidification System (CSS) facility. It is the West Valley Demonstration Project's intent to begin processing of the wash solution through the Integrated Radwaste Treatment System (IRTS) (composed of the STS, LWTS, and CSS) in early April of 1992.

Attached are information packages and air emission dose commitment models for the LWTS and CSS processes. The dosimetric information for the STS was previously submitted to you under separate cover, (Reference 1). As discussed during our annual inspection, (Reference 2) these information packages are being transmitted for your files.

JEP0132

Should you have any questions or require additional information, please contact either E. A. Matthews of the U. S. Department of Energy at FTS 473-4930 (commercial (716) 942-4930), or me at FTS 473-4726 (commercial (716) 942-4726).

Very truly yours,

John J. Fiorenza for SJS

Sandra J. Szalinski
Manager, Environmental Compliance
West Valley Nuclear services Co., Inc.

FJ:92:0132

MKL:jep

Attachments: A) Attachment 1 - Liquid Waste Treatment System
B) Attachment 2 - Cement Solidification System

cc: R. B. Provencher - DOE/WVPO
T. J. Rowland - DOE/WVPO
J. A. Yeazel - DOE/WVPO

JEP0132

Basis for NESHAP Evaluation for the CSS

The attached calculations were performed to estimate potential doses to off-site residents due to airborne emissions from the Cement Solidification System as a result of processing decontaminated sludge wash solution from the Liquid Waste Treatment System (LWTS). The CSS is expected to be operational for 50% of the time, annually.

The amount of radioactivity released to the environment (source term) is estimated in Table CSS-1 using the following assumptions:

> Radioactive inventory derived from the Safety Analysis Report for the LWTS, Rev. 3. Conservatively, it was assumed that 0.1 percent of the activity processed in the CSS is released to the CSS ventilation system.
>
> An adjustment factor of 0.01 (per Appendix D to 40 CFR 61) was applied to this release for the HEPA filter in the ventilation system. This factor is more conservative than the recommended value (0.001 for the first) in the ANSI/N46.1 guidance for HEPA filters.

The resulting source term for those radionuclides which contribute greater than 0.1% of the total committed effective dose equivalent (CEDE) was input to the AIRDOS-PC, version 3.0, code. The activity of ^{238}Pu was added to ^{239}Pu, ^{233}U was added to ^{234}U, and ^{243}Am and ^{244}Cm were added to ^{241}Am for the input. Four-year annual average (1987-1990) wind data from the on-site meteorology tower were input to the code. The resulting dose is estimated to be approximately 0.03 mrem/year to the maximally exposed off-site individual, located 1900 m NNW from the emission point. Actual emissions are monitored at the CSS exhaust per existing standard operating procedures.

ATTACHMENT 2
CSS SOURCE TERM

Nuclide	Retention Class	CSS Feed Ci/y	CSS Effluent Ci/y
H-3	WATER	2.47e-16	2.47e-19
H-3	ELEMENTAL	0.00	0.00
C-14	ORGANIC	0.00	0.00
C-14	CO2	0.00	0.00
Fe-55	D	2.07e-02	2.07e-07
Co-60	Y	2.15e+00	2.15e-05
Ni-63	D	1.49e+02	1.49e-03
Sr-90+	Y	1.22e+02	1.22e-03
Tc-99	W	2.76e+02	2.76e-03
Ru-106	Y	1.51e-01	1.51e-06
Sb-125	W	3.90e+01	3.90e-04
Te-125m	W	8.76e+00	8.76e-05
I-129	D	1.52e-18	1.52e-21
Cs-134	D	4.41e-01	4.41e-06
Cs-137+	D	8.83e+02	8.83e-03
Pm-147	Y	1.27e+01	1.27e-04
Sm-151	W	2.47e-01	2.47e-06
Eu-154	W	2.23e+00	2.23e-05
Eu-155	W	3.03e-01	3.03e-06
U-233	Y	1.04e+00	1.04e-05
U-234	Y	6.21e-01	6.21e-06
U-235	Y	1.35e-02	1.35e-07
U-238	Y	1.27e-01	1.27e-06
Pu-238	W	1.19e+01	1.19e-04
Pu-239	W	2.85e+00	2.85e-05
Pu-240	W	2.12e+00	2.12e-05
Pu-241	W	1.44e+02	1.44e-03
Am-241	W	5.57e+00	5.57e-05
Am-243	W	3.98e-01	3.98e-06
Cm-244	W	1.59e+00	1.59e-05

40 CFR Part 61
National Emission Standards
for Hazardous Air Pollutants

CLEAN AIR ACT COMPLIANCE REPORT
(Version 3.0 November 1989)

Facility: West Valley Demonstration Project (DOE)
Address: P.O. Box 191
West Valley , NY. 14171-0191
Annual Assessment for Year: 1992
Date Submitted: 3/ 5/92

Comments: Cement Solidification System

Prepared By:

Name: James J. Prowse
Title: Project Health Physicist
Phone #: (716) 942-4270

Prepared for:
U.S. Environmental Protection Agency
Office of Radiation Programs
Washington, D.C. 20460

CLEAN AIR ACT COMPLIANCE REPORT 3/ 5/92 12:35 AM

Facility: West Valley Demonstration Project (DOE)
Address: P.O. Box 191 City: West Valley State: NY
Comments: Cement Solidification System
Year: 1992

	Dose Equivalent Rates to Nearby Individuals (mrem/year)
Effective Dose Equivalent	0.0390
Highest Organ Dose is to ENDOSTEUM	0.5200

----------EMISSION INFORMATION----------

Radionuclide	Class	Amad	Stack CSSTK (Ci/y)
SR-90	D	1.0	1.2E-03
U-234	Y	1.0	1.7E-05
PU-240	Y	1.0	2.1E-05
PU-241	Y	1.0	1.4E-03
PU-239	Y	1.0	1.5E-04
AM-241	W	1.0	7.6E-05

Stack Height (m)	22.25
Stack Diameter (m)	0.60
Momentum (m/s)	15.2

----------SITE INFORMATION----------

Wind Data	AV4YR10M.WND	Temperature (C)	7
Food Source	LOCAL	Rainfall (cm/y)	104
Distance to Individuals (m)	1900	Lid Height (m)	1000

*NOTE: The results of this computer model are dose estimates. They are only to be used for the purpose of determining compliance and reporting per 40 CFR 61.93 and 40 CFR 61.94.

FJ:92:0132

CLEAN AIR ACT COMPLIANCE REPORT 7/30/90 2:47 PM

cility: West Valley Demonstration Project (DOE)
Address: Rock Springs Road City: West Valley State: NY

Comments: Dose Assessment for CSS (no emissions control equipment)
Year: 1989

	Dose Equivalent Rates to Nearby Individuals (mrem/year)
Effective Dose Equivalent	5.3 *
Highest Organ Dose is to ENDOSTEUM	56.0

----------EMISSION INFORMATION----------

Radio-nuclide	Class	Amad	Stack CSS (Ci/y)
H-3	*	0.0	1.3E-03
SR-90	D	1.0	2.4E-01
I-129	D	1.0	6.8E-05
CS-137	D	1.0	1.2E-01
PU-239	Y	1.0	3.6E-02
BA-137M	D	1.0	0.0E-01
Stack Height (m)			22.25
Stack Diameter (m)			0.60
Momentum (m/s)			15.2

* DOSE RATE AT LOCATION OF ACTUAL RESIDENCE (1900 m NNW) IS 4.3 mrem/yr

----------SITE INFORMATION----------

Wind Data	89WVDP10.WND	Temperature (C)	20
Food Source	LOCAL	Rainfall (cm/y)	94
Distance to Individuals (m)	1900	Lid Height (m)	1000

*NOTE: The results of this computer model are dose estimates. They are only to be used for the purpose of determining compliance and reporting per 40 CFR 61.93 and 40 CFR 61.94.

ORGAN DOSE TO THE MAXIMALLY EXPOSED INDIVIDUAL

ORGAN	DOSE EQUIVALENT RATE TO THE ORGAN (mrem/y)
GONADS	1.1E+00
BREAST	5.2E-01
RED MARROW	7.0E+00
LUNGS	1.4E+01
THYROID	6.1E-01
ENDOSTEUM	5.6E+01
REMAINDER	2.7E+00
EFFECTIVE	5.3E+00

DOSE TO THE MAXIMALLY EXPOSED INDIVIDUAL BY PATHWAY FOR ALL RADIONUCLIDES

	EFFECTIVE DOSE EQUIVALENT (mrem/y)	DOSE EQUIVALENT TO THE ORGAN WITH THE HIGHEST DOSE ENDOSTEUM (mrem/y)
INGESTION	1.2E+00	1.7E+01
INHALATION	3.8E+00	3.9E+01
AIR IMMERSION	6.2E-10	6.1E-10
GROUND SURFACE	3.1E-01	3.1E-01
TOTAL:	5.3E+00	5.6E+01

DOSE TO THE MAXIMALLY EXPOSED INDIVIDUAL BY RADIONUCLIDE FOR ALL PATHWAYS

RADIONUCLIDE	EFFECTIVE DOSE EQUIVALENT (mrem/y)	DOSE EQUIVALENT TO THE ORGAN WITH THE HIGHEST DOSE ENDOSTEUM (mrem/y)
H-3	3.8E-07	2.8E-07
SR-90	5.2E-01	5.7E+00
I-129	2.4E-03	8.5E-05
CS-137	9.3E-02	6.1E-02
PU-239	4.4E+00	4.9E+01
BA-137M	3.1E-01	3.1E-01
TOTAL :	5.3E+00	5.6E+01

EFFECTIVE DOSE EQUIVALENT AS A FUNCTION OF DISTANCE IN THE DIRECTIONS OF THE MAXIMALLY EXPOSED INDIVIDUAL FOR ALL RADIONUCLIDES AND ALL PATHWAYS

DIRECTION : NORTH

DISTANCE (meters)	EFFECTIVE DOSE EQUIVALENT (mrem/y)
1900	5.3E+00
3000	3.3E+00
10000	8.1E-01
80000	2.6E-02

EFFECTIVE DOSE EQUIVALENT AS A FUNCTION OF ALL DISTANCES AND ALL DIRECTIONS FOR ALL RADIONUCLIDES AND ALL PATHWAYS

DIRECTIONS:	N	NNE	NE	ENE	E	ESE	SE	SSE
DISTANCE (METERS):								
1900	5.3E+00	3.8E+00	3.2E+00	2.5E+00	2.1E+00	3.0E+00	4.4E+00	2.8E+00
3000	3.3E+00	2.2E+00	1.8E+00	1.4E+00	1.2E+00	1.6E+00	2.2E+00	1.4E+00
10000	8.1E-01	4.7E-01	3.5E-01	2.6E-01	2.2E-01	2.7E-01	3.8E-01	2.4E-01
80000	2.6E-02	1.3E-02	9.2E-03	5.8E-03	5.0E-03	7.3E-03	1.3E-02	8.9E-03

	S	SSW	SW	WSW	W	WNW	NW	NNW
DISTANCE (METERS):								
1900	9.7E-01	6.5E-01	4.9E-01	5.0E-01	6.8E-01	8.2E-01	2.0E+00	4.3E+00
3000	4.8E-01	3.3E-01	2.5E-01	2.5E-01	3.5E-01	4.4E-01	1.0E+00	2.5E+00
10000	8.1E-02	5.5E-02	4.3E-02	4.3E-02	6.2E-02	8.2E-02	1.9E-01	6.0E-01
80000	3.0E-03	1.7E-03	1.3E-03	1.3E-03	1.7E-03	2.1E-03	5.8E-03	2.0E-02

METEOROLOGICAL AND PLANT INFORMATION SUPPLIED TO PROGRAM----

AVERAGE VERTICAL TEMPERATURE GRADIENT OF THE AIR (DEG K/METER)

IN STABILITY CLASS E	0.0728
IN STABILITY CLASS F	0.1090
IN STABILITY CLASS G	0.1455

PLUME DEPLETION AND DEPOSITION PARAMETERS

NUCLIDE	GRAVITATIONAL FALL VELOCITY (METERS/SEC)	DEPOSITION VELOCITY (METERS/SEC)	SCAVENGING COEFFICIENT (1/SEC)	EFFECTIVE DECAY CONSTANT IN PLUME (PER DAY)
H-3	0.000	0.00000	0.000E+00	0.000E+00
SR-90	0.000	0.00180	0.940E-05	0.000E+00
I-129	0.000	0.03500	0.940E-05	0.000E+00
CS-137	0.000	0.00180	0.940E-05	0.000E+00
PU-239	0.000	0.00180	0.940E-05	0.000E+00
BA-137M	0.000	0.00180	0.940E-05	0.391E+03

FREQUENCY OF ATMOSPHERIC STABILITY CLASSES FOR EACH DIRECTION

TOR	FRACTION OF TIME IN EACH STABILITY CLASS						
	A	B	C	D	E	F	G
N	0.0060	0.0120	0.0216	0.2296	0.2849	0.1474	0.2984
NNW	0.0171	0.0181	0.0226	0.3382	0.2369	0.1149	0.2522
NW	0.0430	0.0239	0.0738	0.5830	0.1810	0.0526	0.0428
WNW	0.0556	0.0492	0.0492	0.6130	0.1408	0.0614	0.0307
W	0.0746	0.0482	0.0746	0.6870	0.0816	0.0270	0.0070
WSW	0.1024	0.1288	0.1200	0.5552	0.0744	0.0096	0.0096
SW	0.1366	0.0636	0.1366	0.5722	0.0542	0.0094	0.0275
SSW	0.0881	0.0945	0.1622	0.6009	0.0473	0.0070	0.0000
S	0.1221	0.1907	0.0972	0.5610	0.0252	0.0000	0.0037
SSE	0.0940	0.1045	0.1082	0.6498	0.0411	0.0012	0.0012
SE	0.0558	0.0791	0.0827	0.6690	0.1062	0.0054	0.0019
ESE	0.0185	0.0203	0.0559	0.7229	0.1536	0.0254	0.0034
E	0.0234	0.0439	0.0643	0.5977	0.1857	0.0748	0.0102
ENE	0.0383	0.0383	0.0630	0.5607	0.2027	0.0901	0.0068
NE	0.0237	0.0473	0.0383	0.5412	0.2108	0.0988	0.0399
NNE	0.0106	0.0146	0.0370	0.3425	0.3624	0.1297	0.1032

FREQUENCIES OF WIND DIRECTIONS AND RECIPROCAL-AVERAGED WIND SPEEDS

WIND TOWARD	FREQUENCY	WIND SPEEDS FOR EACH STABILITY CLASS (METERS/SEC)						
		A	B	C	D	E	F	G
N	0.155	1.85	3.10	2.88	2.30	1.38	0.84	0.79
NNW	0.128	2.74	3.38	3.71	2.25	1.39	0.87	0.80
NW	0.049	2.64	2.48	1.69	1.79	1.19	0.83	0.77
WNW	0.019	2.47	1.81	1.45	1.58	0.88	0.77	0.77
W	0.017	3.31	2.21	1.49	1.62	0.77	0.77	0.77
WSW	0.013	1.69	1.33	1.32	1.41	0.77	0.77	0.77
SW	0.013	1.62	1.91	1.49	1.38	0.77	0.77	0.77
SSW	0.017	2.66	1.40	2.25	1.42	0.77	0.77	0.00
S	0.032	2.68	2.27	2.11	1.63	0.96	0.00	0.77
SSE	0.098	3.62	2.77	2.21	2.04	1.11	0.77	0.77
SE	0.129	3.70	3.25	2.92	1.96	1.02	0.77	1.19
ESE	0.068	3.17	2.58	2.58	1.76	0.87	0.81	0.77
E	0.045	2.03	1.88	2.75	1.50	0.82	0.77	0.77
ENE	0.051	2.41	3.19	2.15	1.51	0.84	0.79	0.77
NE	0.079	3.24	3.19	2.01	1.97	1.05	0.77	0.77
NNE	0.087	2.72	2.49	2.23	1.86	1.24	0.78	0.78

FREQUENCIES OF WIND DIRECTIONS AND TRUE-AVERAGE WIND SPEEDS

TOWARD	FREQUENCY	WIND SPEEDS FOR EACH STABILITY CLASS (METERS/SEC)						
		A	B	C	D	E	F	G
N	0.155	3.14	3.97	4.42	4.04	2.57	0.99	0.82
NNW	0.128	3.89	3.70	4.24	3.61	2.39	1.10	0.86
NW	0.049	3.17	3.29	2.45	2.69	1.83	1.02	0.77
WNW	0.019	3.36	2.81	2.34	2.66	1.08	0.77	0.77
W	0.017	3.55	3.08	2.42	2.62	0.77	0.77	0.77
WSW	0.013	2.57	2.06	2.30	2.21	0.77	0.77	0.77
SW	0.013	2.22	2.31	2.21	2.12	0.77	0.77	0.77
SSW	0.017	2.71	1.93	2.65	2.13	0.77	0.77	0.00
S	0.032	3.29	2.97	2.84	2.35	1.28	0.00	0.77
SSE	0.098	4.03	3.31	2.77	3.01	1.64	0.77	0.77
SE	0.129	3.96	3.60	3.49	2.85	1.44	0.77	1.67
ESE	0.068	3.39	3.31	3.15	2.56	1.05	0.90	0.77
E	0.045	2.37	2.46	2.86	2.23	0.95	0.77	0.77
ENE	0.051	2.78	3.42	2.63	2.17	0.97	0.87	0.77
NE	0.079	3.47	3.42	3.02	2.77	1.62	0.77	0.77
NNE	0.087	2.81	3.22	3.41	2.82	1.90	0.79	0.82

5D-15A SAMPLE RESULTS CSS INVENTORY

LOG NUM	DATE	DENSITY	TS	pH	GR ALPHA uCi/mL	GR BETA uCi/mL
8801605	27-MAY-88	1.317	39.9	9.93	6.09E-02	1.97E+00
8801607	28-MAY-88	1.325	40.8	9.97	9.69E-02	1.56E+00
8801831	10-JUN-88	1.324	39.7	9.98	6.37E-02	1.38E+00
8801932	21-JUN-88	1.298	38.0	10.01	4.43E-02	9.38E-01
8801963	24-JUN-88	1.301	38.1	10.06	6.64E-02	1.23E+00
8802011	02-JUL-88	1.317	39.6	10.06	5.32E-02	1.28E+00
8802094	14-JUL-88	1.308	39.6	10.01	6.65E-02	9.78E-01
8802108	15-JUL-88	1.298	38.2	10.02	5.37E-02	1.15E+00
8802159	22-JUL-88	1.306	39.1	10.03	7.93E-02	1.61E+00
8802220	01-AUG-88	1.306	40.2	10.14	7.16E-02	1.24E+00
8802345	17-AUG-88	1.303	37.6	10.03	6.65E-02	1.66E+00
8802373	22-AUG-88	1.308	38.7	10.10	6.91E-02	1.95E+00
8802611	21-SEP-88	1.318	39.6	10.11	7.16E-02	1.89E+00
8803744	01-DEC-88	1.320	39.1	10.20	7.67E-02	1.30E+00
8803754	02-DEC-88	1.329	38.9	10.28	5.88E-02	1.55E+00
8803854	08-DEC-88	1.323	38.8	10.20	4.95E-02	1.44E+00
8900176	21-JAN-89	1.320	38.0	10.43	3.84E-02	8.59E-01
8900330	03-FEB-89	1.323	39.6	10.54	3.58E-02	7.04E-01
8900384	07-FEB-89	1.319	39.2	10.54	5.12E-02	1.00E+00
8900531	17-FEB-89	1.316	38.8	10.42	3.71E-02	8.47E-01
8900702	03-MAR-89	1.319	39.2	10.56	4.99E-02	1.16E+00
8900744	07-MAR-89	1.328	40.1	10.52	5.09E-02	8.76E-01
8900905	27-MAR-89	1.322	39.5	10.72	5.24E-02	1.98E+00
8901221	06-APR-89	1.331	40.6	10.68	5.12E-02	1.81E+00
8901243	07-APR-89	1.327	40.1	10.82	5.50E-02	2.12E+00
8901366	23-APR-89	1.328	40.1	10.53	6.14E-02	1.52E+00
8901378	25-APR-89	1.325	39.9	10.51	3.84E-02	1.16E+00
8901573	05-MAY-89	1.325	39.9	10.48	6.65E-02	1.36E+00
8901612	09-MAY-89	1.331	40.6	10.59	5.88E-02	1.78E+00
8901972	18-MAY-89	1.333	40.8	10.82	5.12E-02	1.89E+00
8902222	15-JUN-89	1.326	40.0	10.44	7.93E-02	2.92E+00
8902261	20-JUN-89	1.311	38.2	10.49	5.85E-02	1.87E+00
8902498	07-JUL-89	1.334	40.9	10.36	6.40E-02	2.60E+00
8903077	04-AUG-89	1.328	40.2	10.27	5.63E-02	1.86E+00
8903127	09-AUG-89	1.331	40.6	10.30	5.26E-02	1.46E+00
8903235	18-AUG-89	1.333	40.8	10.29	5.63E-02	1.52E+00
8903381	01-SEP-89	1.326	40.0	10.15	6.14E-02	1.26E+00
8903407	06-SEP-89	1.321	39.4	10.39	9.90E-02	1.23E+00
8903587	15-SEP-89	1.309	38.0	10.22	4.55E-02	1.01E+00
8903903	04-OCT-89	1.324	39.8	10.28	5.31E-02	1.79E+00
8904387	20-OCT-89	1.324	39.8	10.10	6.43E-02	1.55E+00
8904508	24-OCT-89	1.324	39.8	9.86	6.79E-02	9.72E-01
8905009	07-NOV-89	1.321	39.4	9.84	6.61E-02	1.44E+00
8905332	17-NOV-89	1.314	38.6	9.81	6.80E-02	1.09E+00
8905433	30-NOV-89	1.326	40.0	9.76	6.60E-02	1.03E+00
8905448	01-DEC-89	1.327	40.1	9.77	7.11E-02	9.89E-01
8905536	13-DEC-89	1.315	38.7	9.81	6.40E-02	1.58E+00
MEAN		1.320	39.5	10.24	6.04E-02	1.45E+00
	DAYS	566				
	YEARS	1.55				

LOG NUM	DATE	DENSITY	TS	pH	GR ALPHA Ci	GR BETA Ci
8801605	27-MAY-88				9.44E-01	3.05E+01
8801607	28-MAY-82				1.31E+00	2.12E+01
8801831	10-JUN-88				1.78E+00	3.85E+01
8801932	21-JUN-88				9.23E-01	1.95E+01
8801963	24-JUN-88				1.50E+00	2.77E+01
8802011	02-JUL-88				5.88E-01	1.42E+01
8802094	14-JUL-88				1.84E+00	2.71E+01
8802108	15-JUL-88				7.17E-01	1.54E+01
8802159	22-JUL-88				2.04E+00	4.14E+01
8802220	01-AUG-88				1.02E+00	1.76E+01
8802345	17-AUG-88				9.46E-01	2.39E+01
8802373	22-AUG-88				1.98E+00	5.57E+01
8802611	21-SEP-88				3.77E-01	9.95E+00
8803744	01-DEC-88				2.07E+00	3.51E+01
8803754	02-DEC-88				9.02E-01	2.38E+01
8803854	08-DEC-88				2.99E-01	8.70E+00
8900176	21-JAN-89				1.06E+00	2.38E+01
8900330	03-FEB-89				1.03E+00	2.02E+01
8900384	07-FEB-89				6.72E-01	1.31E+01
8900531	17-FEB-89				6.89E-01	1.57E+01
8900702	03-MAR-89				1.46E+00	3.39E+01
8900744	07-MAR-89				8.18E-01	1.41E+01
8900905	27-MAR-89				1.14E+00	4.29E+01
8901221	06-APR-89				1.49E+00	5.28E+01
8901243	07-APR-89				3.57E-01	1.38E+01
8901366	23-APR-89				1.80E+00	4.46E+01
8901378	25-APR-89				3.06E-01	9.23E+00
8901573	05-MAY-89				2.18E+00	4.45E+01
8901612	09-MAY-89				9.97E-01	3.02E+01
8901972	18-MAY-89				7.17E-01	2.65E+01
8902222	15-JUN-89				1.06E+00	3.92E+01
8902261	20-JUN-89				4.92E-01	1.57E+01
8902498	07-JUL-89				1.15E+00	4.68E+01
8903077	04-AUG-89				1.64E+00	5.43E+01
8903127	09-AUG-89				8.14E-01	2.26E+01
8903235	18-AUG-89				1.80E+00	4.86E+01
8903381	01-SEP-89				1.94E+00	3.98E+01
8903407	06-SEP-89				7.88E-01	9.79E+00
8903587	15-SEP-89				1.50E+00	3.32E+01
8903903	04-OCT-89				1.05E+00	3.54E+01
8904387	20-OCT-89				2.06E+00	4.97E+01
8904508	24-OCT-89				5.34E-01	7.64E+00
8905009	07-NOV-89				6.00E-01	1.31E+01
8905332	17-NOV-89				2.15E+00	3.44E+01
8905433	30-NOV-89				1.96E+00	3.05E+01
8905448	01-DEC-89				8.60E-01	1.20E+01
8905536	13-DEC-89				1.22E+00	3.01E+01

			Ci	Ci
DAYS	566	TOTAL	5.56E+01	1.32E+03
YEARS	1.55	AN. AVG.	3.58E+01	8.50E+02
FRACTION	.001	RELEASE	3.58E-02	8.50E-01

LOG NUM	Cs-137 uCi/mL	Sb-125* uCi/mL	Tc-99* uCi/mL	H-3 uCi/mL	Pu uCi/mL	Sr-90 uCi/mL
8801605	4.80E-01	1.27E-02	8.04E-01	4.59E-03	4.82E-02	6.69E-02
8801607	2.05E-01	1.43E-02	7.73E-01	2.94E-03	7.04E-02	3.11E-01
8801831	9.64E-02	1.34E-02	7.50E-01	4.91E-03	6.54E-02	3.41E-01
8801932	6.20E-02	1.62E-02	7.31E-01	3.75E-03	4.69E-02	1.87E-01
8801963	2.69E-02	1.41E-02	7.30E-01	3.65E-03	5.43E-02	4.80E-01
8802011	2.02E-02	1.35E-02	7.63E-01	2.64E-03	6.05E-02	1.69E-01
8802094	3.64E-02	1.25E-02	5.67E-01	2.21E-03	5.72E-02	2.89E-01
8802108	5.09E-02	1.27E-02	7.80E-01	3.60E-03	7.34E-02	3.86E-01
8802159	1.05E-01	1.20E-02	6.36E-01	4.72E-03	6.06E-02	3.79E-01
8802220	1.64E-01	1.19E-02	7.31E-01	2.84E-03	4.98E-02	4.46E-01
8802345	4.00E-01	1.41E-02	6.04E-01	3.04E-03	6.53E-02	6.69E-01
8802373	5.42E-01	1.40E-02	6.34E-01	2.43E-03	5.97E-02	4.56E-01
8802611	5.85E-01	1.10E-02	7.80E-01	2.66E-03	5.90E-02	3.84E-01
8803744	2.12E-01	1.23E-02	7.42E-01	2.48E-03	6.82E-02	9.86E-02
8803754	2.59E-01	1.17E-02	7.58E-01	2.67E-03	6.70E-02	2.08E-01
8803854	2.69E-01	1.08E-02	7.50E-01	2.55E-03	6.12E-02	1.60E-01
8900176	9.68E-02	1.19E-02	8.79E-01	1.47E-03	4.41E-02	4.46E-02
8900330	4.52E-02	1.25E-02	8.90E-01	1.14E-03	6.21E-02	4.89E-02
8900384	1.70E-02	1.20E-02	8.26E-01	1.19E-03	5.54E-02	4.38E-02
8900531	8.48E-02	1.30E-02	8.14E-01	1.72E-03	5.08E-02	8.53E-02
8900702	1.04E-02	1.20E-02	8.65E-01	1.76E-03	5.33E-02	1.81E-01
8900744	3.08E-02	1.24E-02	8.24E-01	1.39E-03	5.18E-02	1.08E-01
8900905	2.38E-01	1.14E-02	7.91E-01	2.10E-03	4.13E-02	3.27E-01
8901221	1.73E-01	1.20E-02	7.21E-01	2.42E-03	5.46E-02	3.27E-01
8901243	2.13E-01	1.13E-02	7.31E-01	2.04E-03	4.41E-02	3.13E-01
8901366	1.49E-01	1.18E-02	7.74E-01	1.94E-03	5.74E-02	2.39E-02
8901378	9.17E-02	1.26E-02	7.51E-01	2.23E-03	3.63E-02	2.13E-01
8901573	4.40E-02	1.17E-02	7.70E-01	1.43E-03	6.12E-02	2.61E-01
8901612	7.97E-02	1.12E-02	7.80E-01	1.67E-03	5.70E-02	3.18E-01
8901972	1.89E-01	1.17E-02	7.61E-01	2.88E-03	4.12E-02	4.36E-01
8902222	5.75E-01	1.06E-02	8.60E-01	1.63E-03	6.40E-02	6.46E-01
8902261	6.29E-01	1.02E-02	7.70E-01	1.77E-03	5.30E-02	4.78E-01
8902498	5.55E-01	1.11E-02	8.50E-01	1.70E-03	6.79E-02	5.67E-01
8903077	1.72E-01	1.10E-02	9.48E-01	1.67E-03	5.05E-02	5.27E-01
8903127	1.58E-01	1.05E-02	1.02E+00	1.56E-03	5.63E-02	4.24E-01
8903235	3.46E-01	1.07E-02	1.00E+00	1.48E-03	5.51E-02	3.51E-01
8903381	4.15E-01	1.01E-02	1.02E+00	1.70E-03	6.56E-02	4.82E-01
8903407	4.88E-02	1.07E-02	9.74E-01	1.74E-03	8.81E-02	2.76E-01
8903587	4.25E-02	9.81E-03	9.10E-01	1.45E-03	6.90E-02	2.40E-01
8903903	4.04E-01	9.92E-03	8.58E-01	1.36E-03	5.94E-02	4.78E-01
8904387	3.33E-01	9.60E-03	7.97E-01	1.46E-03	8.20E-02	3.88E-01
8904508	6.98E-02	9.96E-03	8.25E-01	1.67E-03	8.97E-02	2.16E-01
8905009	4.72E-01	1.01E-02	8.26E-01	1.35E-03	7.09E-02	2.01E-01
8905332	2.40E-01	9.64E-03	8.90E-01	1.51E-03	7.66E-02	1.60E-01
8905433	5.41E-02	9.64E-03	8.00E-01	1.62E-03	7.17E-02	2.04E-01
8905448	1.12E-01	9.69E-03	8.65E-01	1.80E-03	7.99E-02	2.24E-01
8905536	5.93E-01	9.64E-03	8.33E-01	1.51E-03	6.45E-02	2.51E-01
MEAN	2.17E-01	1.17E-02	8.02E-01	2.21E-03	6.03E-02	2.95E-01 two sigma

* SEE NOTE ON PAGE 6

LOG NUM	Cs-137	Sb-125*	Tc-99*	H-3	Pu*	Sr-90
	Ci	Ci	Ci	Ci	Ci	Ci
8801605	7.44E+00	1.97E-01	1.25E+01	7.12E-02	6.54E-01	1.04E+00
8801607	2.78E+00	1.94E-01	1.05E+01	3.99E-02	9.55E-01	4.22E+00
8801831	2.69E+00	3.74E-01	2.09E+01	1.37E-01	1.83E+00	9.52E+00
8801932	1.29E+00	3.37E-01	1.52E+01	7.81E-02	9.77E-01	3.89E+00
8801963	6.07E-01	3.18E-01	1.65E+01	8.23E-02	1.22E+00	1.08E+01
8802011	2.23E-01	1.49E-01	8.44E+00	2.92E-02	6.69E-01	1.86E+00
8802094	1.01E+00	3.47E-01	1.57E+01	6.13E-02	1.59E+00	8.01E+00
8802108	6.80E-01	1.70E-01	9.62E+00	4.81E-02	9.81E-01	5.16E+00
8802159	2.70E+00	3.09E-01	1.64E+01	1.21E-01	1.56E+00	9.74E+00
8802220	2.33E+00	1.69E-01	1.04E+01	4.04E-02	7.08E-01	6.34E+00
8802345	5.69E+00	2.01E-01	8.59E+00	4.32E-02	9.29E-01	9.51E+00
8802373	1.55E+01	4.00E-01	1.81E+01	6.95E-02	1.71E+00	1.30E+01
8802611	3.08E+00	5.79E-02	4.11E+00	1.40E-02	3.11E-01	2.02E+00
8803744	5.72E+00	3.32E-01	2.00E+01	6.69E-02	1.84E+00	2.66E+00
8803754	3.97E+00	1.79E-01	1.16E+01	4.09E-02	1.03E+00	3.19E+00
8803854	1.63E+00	6.53E-02	4.53E+00	1.54E-02	3.70E-01	9.67E-01
8900176	2.68E+00	3.30E-01	2.44E+01	4.07E-02	1.22E+00	1.24E+00
8900330	1.30E+00	3.59E-01	2.56E+01	3.28E-02	1.79E+00	1.41E+00
8900384	2.23E-01	1.57E-01	1.08E+01	1.56E-02	7.27E-01	5.75E-01
8900531	1.58E+00	2.41E-01	1.51E+01	3.19E-02	9.44E-01	1.58E+00
8900702	3.04E-01	3.50E-01	2.52E+01	5.14E-02	1.56E+00	5.28E+00
8900744	4.95E-01	1.99E-01	1.32E+01	2.23E-02	8.32E-01	1.74E+00
8900905	5.16E+00	2.47E-01	1.71E+01	4.55E-02	8.95E-01	7.09E+00
8901221	5.05E+00	3.50E-01	2.10E+01	7.06E-02	1.59E+00	9.54E+00
8901243	1.38E+00	7.33E-02	4.74E+00	1.32E-02	2.86E-01	2.03E+00
8901366	4.37E+00	3.46E-01	2.27E+01	5.69E-02	1.68E+00	7.01E-01
8901378	7.30E-01	1.00E-01	5.98E+00	1.78E-02	2.89E-01	1.70E+00
8901573	1.44E+00	3.83E-01	2.52E+01	4.68E-02	2.00E+00	8.54E+00
8901612	1.35E+00	1.90E-01	1.32E+01	2.83E-02	9.66E-01	5.39E+00
8901972	2.65E+00	1.64E-01	1.07E+01	4.03E-02	5.77E-01	6.11E+00
8902222	7.71E+00	1.42E-01	1.15E+01	2.19E-02	8.59E-01	8.67E+00
8902261	5.29E+00	8.57E-02	6.47E+00	1.49E-02	4.45E-01	4.02E+00
8902498	9.98E+00	2.00E-01	1.53E+01	3.06E-02	1.22E+00	1.02E+01
8903077	5.02E+00	3.21E-01	2.77E+01	4.87E-02	1.47E+00	1.54E+01
8903127	2.45E+00	1.63E-01	1.58E+01	2.41E-02	8.71E-01	6.56E+00
8903235	1.11E+01	3.42E-01	3.20E+01	4.73E-02	1.76E+00	1.12E+01
8903381	1.31E+01	3.19E-01	3.22E+01	5.36E-02	2.07E+00	1.52E+01
8903407	3.88E-01	8.52E-02	7.75E+00	1.39E-02	7.01E-01	2.20E+00
8903587	1.40E+00	3.23E-01	2.99E+01	4.77E-02	2.27E+00	7.89E+00
8903903	8.00E+00	1.96E-01	1.70E+01	2.69E-02	1.18E+00	9.46E+00
8904387	1.07E+01	3.08E-01	2.55E+01	4.68E-02	2.63E+00	1.24E+01
8904508	5.49E-01	7.83E-02	6.49E+00	1.31E-02	7.05E-01	1.70E+00
8905009	4.28E+00	9.16E-02	7.49E+00	1.22E-02	6.43E-01	1.82E+00
8905332	7.58E+00	3.05E-01	2.81E+01	4.77E-02	2.42E+00	5.06E+00
8905433	1.60E+00	2.86E-01	2.37E+01	4.80E-02	2.12E+00	6.05E+00
8905448	1.35E+00	1.17E-01	1.05E+01	2.18E-02	9.66E-01	2.71E+00
8905536	1.13E+01	1.84E-01	1.59E+01	2.88E-02	1.23E+00	4.78E+00

Ci	Ci	Ci	Ci	Ci	Ci
1.88E+02	1.08E+01	7.51E+02	2.02E+00	5.62E+01	2.70E+02
1.21E+02	6.99E+00	4.85E+02	1.30E+00	3.63E+01	1.74E+02
1.21E-01	6.99E-03	4.85E-01	1.30E-03	3.63E-02	1.74E-01

LOG NUM	I-129 uCi/mL	COMP STR	Gallons
8801605	1.01E-04	487	4102
8801607	1.34E-04	375	3588
8801831	1.28E-04	234	7384
8801932	7.14E-05	609	5510
8801963	1.10E-04	209	5966
8802011	1.15E-04	609	2926
8802094	1.01E-04	682	7334
8802108	1.35E-04	682	3534
8802159	1.25E-04	682	6802
8802220	1.05E-04	492	3762
8802345	9.07E-05	619	3762
8802373	9.41E-05	390	7562
8802611	1.06E-04	850	1393
8803744	1.20E-04	950	7137
8803754	1.26E-04	739	4056
8803854	1.22E-04	812	1599
8900176	9.60E-05	769	7332
8900330	1.32E-04	1375	7605
8900384	1.17E-04	1140	3471
8900531	1.37E-04	912	4914
8900702	1.35E-04	812	7722
8900744	8.60E-05	1000	4251
8900905	1.30E-04	750	5733
8901221	1.26E-04	612	7722
8901243	1.34E-04	550	1716
8901366	1.11E-04	963	7761
8901378	1.04E-04	1025	2106
8901573	1.14E-04 *	869	8658
8901612	9.84E-05	812	4485
8901972	1.14E-04 *	1075	3705
8902222	1.14E-04 *	780	3549
8902261	1.14E-04 *	938	2223
8902498	1.14E-04 *	719	4758
8903077	1.14E-04 *	762	7722
8903127	1.14E-04 *	681	4095
8903235	1.14E-04 *	565	8463
8903381	1.14E-04 *	1063	8346
8903407	1.14E-04 *	875	2106
8903587	1.14E-04 *	1069	8697
8903903	1.14E-04 *	750	5238 *
8904387	1.14E-04 *	900	8480
8904508	1.14E-04 *	775	2080
8905009	1.14E-04 *	700	2400
8905332	1.14E-04 *	538	8360
8905433	1.14E-04 *	650	7840
8905448	1.14E-04 *	675	3200
8905536	1.14E-04 *	575	5040
MEAN	1.14E-04	747	5238
		ERR	

* MISSING DATA, USED MEAN VALUE

LOG NUM	I-129 Ci	COMP STR	Gallons
8801605	1.57E-03		4102
8801607	1.82E-03		3588
8801831	3.57E-03		7384
8801932	1.49E-03		5510
8801963	2.48E-03		5966
8802011	1.27E-03		2926
8802094	2.80E-03		7334
8802108	1.80E-03		3534
8802159	3.21E-03		6802
8802220	1.49E-03		3762
8802345	1.29E-03		3762
8802373	2.69E-03		7562
8802611	5.58E-04		1393
8803744	3.24E-03		7137
8803754	1.93E-03		4056
8803854	7.37E-04		1599
8900176	2.66E-03		7332
8900330	3.79E-03		7605
8900384	1.54E-03		3471
8900531	2.54E-03		4914
8900702	3.94E-03		7722
8900744	1.38E-03		4251
8900905	2.82E-03		5733
8901221	3.68E-03		7722
8901243	8.69E-04		1716
8901366	3.26E-03		7761
8901378	8.28E-04		2106
8901573	3.73E-03		8658
8901612	1.67E-03		4485
8901972	1.60E-03		3705
8902222	1.53E-03		3549
8902261	9.58E-04		2223
8902498	2.05E-03		4758
8903077	3.33E-03		7722
8903127	1.76E-03		4095
8903235	3.65E-03		8463
8903381	3.59E-03		8346
8903407	9.07E-04		2106
8903587	3.75E-03		8697
8903903	2.26E-03		5238
8904387	3.65E-03		8480
8904508	8.96E-04		2080
8905009	1.03E-03		2400
8905332	3.60E-03		8360
8905433	3.38E-03		7840
8905448	1.38E-03		3200
8905536	2.17E-03		5040

Ci	
1.06E-01	246195
6.84E-02	158765
6.84E-05	

NOTE: Tc-99 and Sb-125 are not included in the AIRDOS-PC Database.

TABLE 2 - "Concentration Levels for Environmental Compliance." In 40CFR61 lists the following concentrations that would result in a dose of 10 mrem/yr:

Sr-90 ⇒ 1.9E-14 μCi/mL air
Tc-99 ⇒ 1.4E-13 μCi/mL air
Sb-125 ⇒ 1.6E-13 μCi/mL air

"effectiveness" relative to Sr-90 reference is:

Tc-99 ⇒ 0.14
Sb-125 ⇒ 0.12

Total releases for Tc-99/Sb-125 are multiplied by these ratios and added to Sr-90 release term: 0.174 Ci + (0.14) 0.485 Ci + (0.12) 0.007 Ci ⇒ 0.243 Ci Sr-90 equiv.

Pu as Pu-239

October 23, 1987

U. S. Environmental Protection Agency
Director, Air & Waste Management Division
Attn: Regional Radiation Representative
2 AWM
26 Federal Plaza
New York, New York 10273

CERTIFIED MAIL
RECEIPT REQUESTED

REFERENCE: Letter C. J. Daggett to W. W. Bixby, dated October 5, 1987

SUBJECT: Notification of Startup of Radioactive Air Sources WVDP-187-01, WVDP-287-01 and WVDP-487-01 at the West Valley Demonstration Project West Valley, New York

Gentlemen:

As required by 40 CFR 61.09(a)(2) and the referenced letter, you are hereby notified that the sources of airborne radionuclides identified in the subject approvals to construct/modify were started up. The Contact Size Reduction and Decontamination Facility Ventilation System (WVDP-287-01) was started up on October 13, 1987. The Low-Level Waste Supercompactor Ventilation System (WVDP-487-01) and Building 01-14 Ventilation System (WVDP-187-01) were started up on October 9, 1987.

Sincerely,

Original Signed by
W.W. Bixby

W. W. Bixby, Director
West Valley Project Office

cc: J. H. Barry, DOE-ID
J. P. Hamric, DOE-ID
J. L. Knabenschuh, WVNS
R. G. Spaunburgh, NYSERDA-WV

TGA:253:87 - 0441:87:10

TGA:LEW

WD:87:0666

October 21, 1987

OCT 1987

RECEIVED
DOE-WV

Dr. W. W. Bixby, Director
West Valley Project Office
U. S. Department of Energy
P. O. Box 191
West Valley, New York 14171-0191

Dear Dr. Bixby:

SUBJECT: Notification of Startup of Radioactive Air Sources WVDP-187-01, WVDP-287-01, and WVDP-487-01 at the West Valley Demonstration Project, West Valley, NY

As required by 40 CFR 61.09(a)(2) you are hereby notified that the sources of airborne radionuclide emissions identified in the subject approvals to construct/modify were started up. The Contact Size Reduction and Decontamination Facility Ventilation System (WVDP-287-01) started up on October 13, 1987. The Low-Level Waste Supercompactor Ventilation System (WVDP-487-01) and Building 01-14 Ventilation System (WVDP-187-01) started up on October 9, 1987.

This notification should be forwarded no later than October 23, 1987 to:

U.S. Environmental Protection Agency
Director, Air & Waste Management Division
Attn: Regional Radiation Representative
2 AWM
26 Federal Plaza
New York, NY 10278

Very truly yours,

C. J. Roberts, Manager
Safety and Environmental Assessment
West Valley Nuclear Services Co., Inc.

HE:87:0154

JPE:rlc

cc: T. G. Adams, DOE/WVPO

RLC3014:SEA-78

0441:87:10

October 8, 1987

Mr. J. E. Krauss, President
West Valley Nuclear Services Co., Inc.
P. O. Box 191
West Valley, New York 14171

SUBJECT: Interim NESHAPS Approvals To Construct/Modify Sources of Radionuclide Emissions at the West Valley Demonstration Project

Dear Sir:

Enclosed are the interim approvals from U. S. Environmental Protection Agency, Region II to construct/modify the following sources of radionuclide emissions at the WVDP:

WVDP - 187-01	Building 01-14 Ventilation System
WVDP - 287-01	Contact Size Reduction & Decontamination Facility Ventilation System
WVDP - 387-01	Supernatant Treatment Ventilation System
WVDP - 487-01	Low-Level Waste Supercompactor Ventilation System

Final approval will be issued once the WVDP dose equivalent estimates have been confirmed by the EPA through an independent computer run of the EPA Radiation computer code AIRDOS-EPA.

With the receipt of the above mentioned approvals and in compliance with the terms and conditions of these approvals, you are hereby authorized to proceed with the startup of the subject System.

Sincerely,

WWB

W. W. Bixby, Director
West Valley Project Office

Enclosures

TGA:234:87 - 0373:87:09

TGA:tp

REQUEST FOR APPROVAL TO CONSTRUCT OR MODIFY
SOURCES OF ATMOSPHERIC EMISSIONS OF RADIONUCLIDES

I. NAME AND ADDRESS OF APPLICANT

U.S. Department of Energy
West Valley Demonstration Project Office
P.O. Box 191
West Valley, New York 14171-0191

Operating Contractor:

West Valley Nuclear Services Co., Inc.
P.O. Box 191
West Valley, New York 14171-0191

II. NAME AND LOCATION OF SOURCE

Name: 01-14 Building Heating and Ventilation System

Location: West Valley Demonstration Project
Rock Springs Road
West Valley, New York

Latitude: 42° 27'N

Longitude: 78° 39'W

Date of Construction/Modification: May 1984

Date of Startup: December 11, 1985

(Note: See WVDP General Information Section A for source location map; site boundary, dose receptor location and other general site information.)

III. RELEASE POINT INFORMATION

Emission Point ID:	0114HV
Ground Elevation (Ft MSL):	1413'
Stack Height (Ft):	73'
Height Above Structure (Ft):	15.3'
Inside Dimensions (Inches):	23.6"
Exit Temperature (°F):	100°
Exit Velocity (Ft/Sec):	50
Exit Volume (ACFM):	9700

IV. TECHNICAL INFORMATION ABOUT SOURCE

A. Overview of Operations

The 01-14 Building was constructed as part of a planned expansion of the nuclear fuel reprocessing facility by the former site operator (Nuclear Fuel Services, Co.). It was originally designed to house treatment equipment for off-gas from the PUREX fuel reprocessing process in the 01 cell and acid recovery equipment in the 14 cell. The building and equipment were ready for use but never entered radioactive service because fuel reprocessing operations were terminated at the West Valley facility.

The WVDP has refurbished and modified the building and some equipment contained therein to support high-level radioactive waste vitrification operations at the site. Off-gas from the vitrification process will be routed to the 01 cell, where existing equipment will be used to scrub NO_x from the stream prior to discharge from the process building main stack. The vitrification off-gas treatment system will be described in a separate NESHAPs permit application for the radioactive air discharge. The WVDP holds a permit to construct this system (issued by NYSDEC) which addresses nonradioactive air discharges.

Equipment in the acid recovery cell was removed and the structure was modified to house a low-level liquid radioactive waste Cement Solidification System (CSS). This system will receive concentrated radioactive solutions from the liquid waste treatment system being installed in the main process building. In batch operation, these solutions are blended with dry portland cement in high-shear mixers and poured into steel drums. The system includes liquid waste and dry cement handling and dispensing equipment, two high-shear cement mixers and a drum handling system.

The air discharge from the 01-14 Building Ventilation System is presently comprised of ventilation air from the CSS cell, control room, and support areas. In the future, when the vitrification system enters radioactive service (April, 1991), ventilation air from the off-gas cell and transfer trench between the vitrification cell and the 01-14 Building will be restored to this system. During normal operations, vitrification process off-gas will be contained in the off-gas treatment equipment and will not be a component of the 01-14 Building ventilation release, but rather will be discharged from the process building main stack. The discharge from the process building main stack will be described in a separate NESHAPs submittal.

B. Ventilation System Description

The 01-14 Building ventilation system consists of an 8400 cfm supply system which also serves as the heating supply for this facility. This system provides heated and filtered air to the building. Approximately 2400 cfm (including some infiltration air) passes from the operating aisle through a roughing filter and single stage HEPA filtration prior to discharge from the 01-14 Building stack.

The majority of the supply air (6600 cfm) is presently drawn through the waste dispensing cell and CSS process cell and is passed through double stage HEPA filtration prior to discharge from the 01-14 Building stack. In the future, airflow from the 01 cell will be restored, and some infiltration air will also come from the vitrification off-gas trench. Air passing from the operating aisles into the cells passes through roughing filters and automatic dampers which prevent backflow from the cells to the operating aisles. The exhaust system is driven by a 9700 cfm electric fan which is backed up by a diesel powered fan which has been modified to provide a nominal 9700 cfm (shown on drawings as 8800 cfm). The 01-14 HV system will be operated on a continuous basis for contamination control.

CSS process vessels are vented to the 01-14 Ventilation System via a vessel off-gas header connected to the tank and mixer vents and leading to the exhaust plenum. From there it passes through two banks of HEPA filters prior to discharge along with the cell ventilation air. This airflow is only a few hundred cfm and is not shown on the drawings.

The airflow for these systems is shown in Drawing 900D-474. The instrumentation and controls for the supply system, cell intakes and exhaust system are presented in Drawing 900D-475. Ventilation system details by floor and sections and details are presented in Drawings 901D-400, 900D-477, 900D-478, 900D-479, 900D-480, 900D-481 and 900D-484.

The exhaust from the 01-14 Building Stack is sampled and monitored in accordance with the criteria identified in WVDP General Information Section B - Ventilation Exhaust Monitoring. The stack sampler location is shown in Drawing 901D-403 and sample probe details are shown in Drawing 901D-404. The exhaust filter trains are equipped with temperature and pressure differential monitors and alarms in accordance with WVDP General Information Section C - Ventilation Exhaust Filter Monitoring. HEPA filters are DOP tested in accordance with the requirements identified in WVDP General Information Section D - DOP Test Procedures and Acceptance Criteria.

C. Source Term Development

The major potential source of airborne radioactivity to be discharged from the 01-14 Building ventilation system will be from

the cement solidification system. As mentioned in Section IV.A., vitrification off-gas will be processed in an enclosed system in the off-gas cell for discharge from the process building main stack and will not be a constituent of the 01-14 building ventilation exhaust under normal conditions.

To estimate the source term for normal operations of the 01-14 Building Ventilation System, it is assumed that in a "typical" year, the CSS produces 5,000 drums of solidified waste having an average contact exposure rate of 2 R/hr. The radionuclide distribution of these wastes is assumed to be similar to that in high level waste Tank 8D-2. These assumptions are not meant to represent the worst year of operation, but to be representative of a typical year.

The average concentration of cesium-137 in a drum of solidified waste can be determined from (1) the average exposure rate of 2 R/hr and (2) the exposure rate associated with 1 curie of cesium-137 in a drum of solidified waste. The latter was determined to be 660 mR/hr using the computer code ANISN (Engle, 1973). Thus, each drum of solidified waste will contain:

$$\frac{1 \text{ curie cesium-137/drum}}{0.66 \text{ R/hr}} \times 2 \text{ R/hr} = 3.0 \text{ curies cesium-137}$$

Since 5,000 drums of waste will be produced, about 15,000 Ci of cesium-137 will be processed by the CSS. Using the Tank 8D-2 radionuclide distribution as being representative of the liquid wastes to be processed in the CSS, the quantity and distribution of radionuclides to be processed is given in Table CSS-1. As can be seen in this table about 61,000 curies of activity are estimated to be processed in the CSS in a typical year.

Conservatively assuming that 0.1 percent of the activity is released to the CSS HV system, about 0.0006 curies of activity will be released from the stack in one year from operation of the CSS assuming a decontamination factor (DF) of 10^5 for two stage HEPA filtration (ANSI N46.1-1980) for the CSS HV system. A DF of 1 is used for volatile nuclides (i.e., H-3, C-14 and I-129). The released radionuclides will be dispersed from the 01-14 stack into the surrounding environment.

The ventilation air passing from the operating aisles directly to the exhaust filtration is assumed to be uncontaminated during normal operating conditions and is not included in the source term.

D. Dose Assessment

The radiological impacts to the maximally exposed off-site resident from releases from the 01-14 ventilation system are presented in Table CSS-2. Whole body and organ doses are calculated by the AIRDOS-EPA (version CAAC) model as described in WVDP General Information - Section E. Effective dose equivalents calculated using the WVDP variable trajectory atmospheric dispersion model described in WVDP General Information - Section F, coupled to the AIRDOS-EPA dose assessment code are also presented for comparison.

In both cases the source is modeled as a ground level release for conservatism because the release point is not sufficiently above the Process Building to avoid wake effects.

Worst case accident releases are described in the safety analysis for the Cement Solidification System. Two ventilation system failure scenarios were considered. These are: (1) a bank of HEPA

filters fails, and (2) a fire eliminates both stages of HEPA filtration. The corresponding effective dose equivalents to the maximally exposed off site individual are 40 mrem and 22 mrem respectively.

E. List of Drawings

900D-474	01-14 Building Ventilation & Exhaust Systems Diagrams
900D-475	01-14 Building Ventilation & Exhaust H&V Control Diagrams
901D-400	Building 01-14 First Floor Plant H&V
900D-477	Building 01-14 Second Floor Plan H&V
900D-478	Building 01-14 Third Floor Plan H&V
900D-479	Building 01-14 Fourth Floor Plan H&V
900D-480	Building 01-14 H&V Sections
900D-481	Building 01-14 H&V Sections
900D-484	Building 01-14 Cell Filter System Plans & Section
901D-403	Building 01-14 Exhaust System Vent Stack
901D-404	Building 01-14 Stack Sampling Probe & Details

F. References

ANSI N46.1-1980, Guidance for Defining Safety Related Features of Nuclear Fuel Cycle Facilities.

Engle, W. W., 1973, A Users Manual for ANISN - A One Dimensional Discrete Ordinates Transport Code with Anisotropic Scattering.

TABLE CSS-1

RADIONUCLIDE INVENTORY OF THE LIQUID WASTES
ASSUMED TO BE PROCESSED IN THE CSS IN ONE YEAR

Isotope	Normalized [a] Activity (Curies)	Total Activity (Curies)
H-3	1.5×10^{-5}	2.3×10^{-1}
C-14	1.7×10^{-5}	2.6×10^{-1}
Ni-63	1.1×10^{-4}	1.7
Se-79	4.6×10^{-6}	6.9×10^{-2}
Sr-90	9.6×10^{-1}	1.4×10^{4}
Y-90	9.6×10^{-1}	1.4×10^{4}
Zr-93	2.9×10^{-5}	4.3×10^{-1}
Nb-93m	2.9×10^{-5}	4.3×10^{-1}
Tc-99	2.0×10^{-4}	3.0
Ru-106	4.3×10^{-4}	6.5
Rh-106	4.3×10^{-4}	6.5
Pd-107	1.5×10^{-7}	2.3×10^{-3}
Cd-113	1.1×10^{-17}	1.7×10^{-13}
Sb-125	1.9×10^{-3}	2.8×10^{1}
Te-125m	4.3×10^{-4}	6.4
Sn-126	5.0×10^{-6}	7.5×10^{-2}
Sb-126m	5.0×10^{-6}	7.5×10^{-2}
Sb-126	5.0×10^{-6}	7.5×10^{-2}
I-129	2.6×10^{-8}	3.9×10^{-4}
Cs-134	8.3×10^{-3}	1.2×10^{2}
Cs-135	1.9×10^{-5}	2.9×10^{-1}
Cs-137	1.0	1.5×10^{4}
Ba-137m	9.4×10^{-1}	1.4×10^{4}
Ce-144	1.2×10^{-4}	1.7
Pr-144	1.2×10^{-4}	1.7
Pm-147	1.3×10^{-1}	2.0×10^{3}
Sm-151	2.7×10^{-2}	4.1×10^{2}
Eu-152	6.7×10^{-5}	1.0
Eu-154	2.5×10^{-2}	3.7×10^{2}
Eu-155	5.7×10^{-3}	8.5×10^{1}
U-233	9.5×10^{-7}	1.4×10^{-2}
U-234	5.3×10^{-7}	8.0×10^{-3}
U-235	1.2×10^{-8}	1.8×10^{-4}
U-236	3.5×10^{-8}	5.2×10^{-4}
U-238	1.1×10^{-7}	1.6×10^{-3}
Np-237	1.4×10^{-6}	2.0×10^{-2}
Np-239	2.9×10^{-5}	4.3×10^{-1}
Pu-238	1.1×10^{-3}	1.7×10^{1}

TABLE CSS-1 (Continued)

RADIONUCLIDE INVENTORY OF THE LIQUID WASTES
ASSUMED TO BE PROCESSED IN THE CSS IN ONE YEAR

Isotope	Normalized [a] Activity (Curies)	Total Activity (Curies)
Pu-239	2.0×10^{-4}	3.0
Pu-240	1.5×10^{-4}	2.2
Pu-241	1.4×10^{-2}	2.1×10^{2}
Pu-242	2.1×10^{-7}	3.2×10^{-3}
Am-241	1.5×10^{-3}	2.2×10^{1}
Am-242m	2.6×10^{-5}	3.9×10^{-1}
Am-243	3.0×10^{-5}	4.4×10^{-1}
Cm-242	2.6×10^{-5}	3.9×10^{-1}
Cm-243	4.2×10^{-6}	6.3×10^{-2}
Cm-244	1.3×10^{-3}	1.9×10^{1}
Cm-245	2.1×10^{-7}	3.2×10^{-3}
Cm-246	2.5×10^{-8}	3.7×10^{-4}
		6.1×10^{4}

Note [a] - Normalized to 1 Curie of Cs-137.

TABLE CSS-2

ESTIMATED ANNUAL DOSES FOR RELEASES FROM 01-14 BUILDING VENTILATION SYSTEM

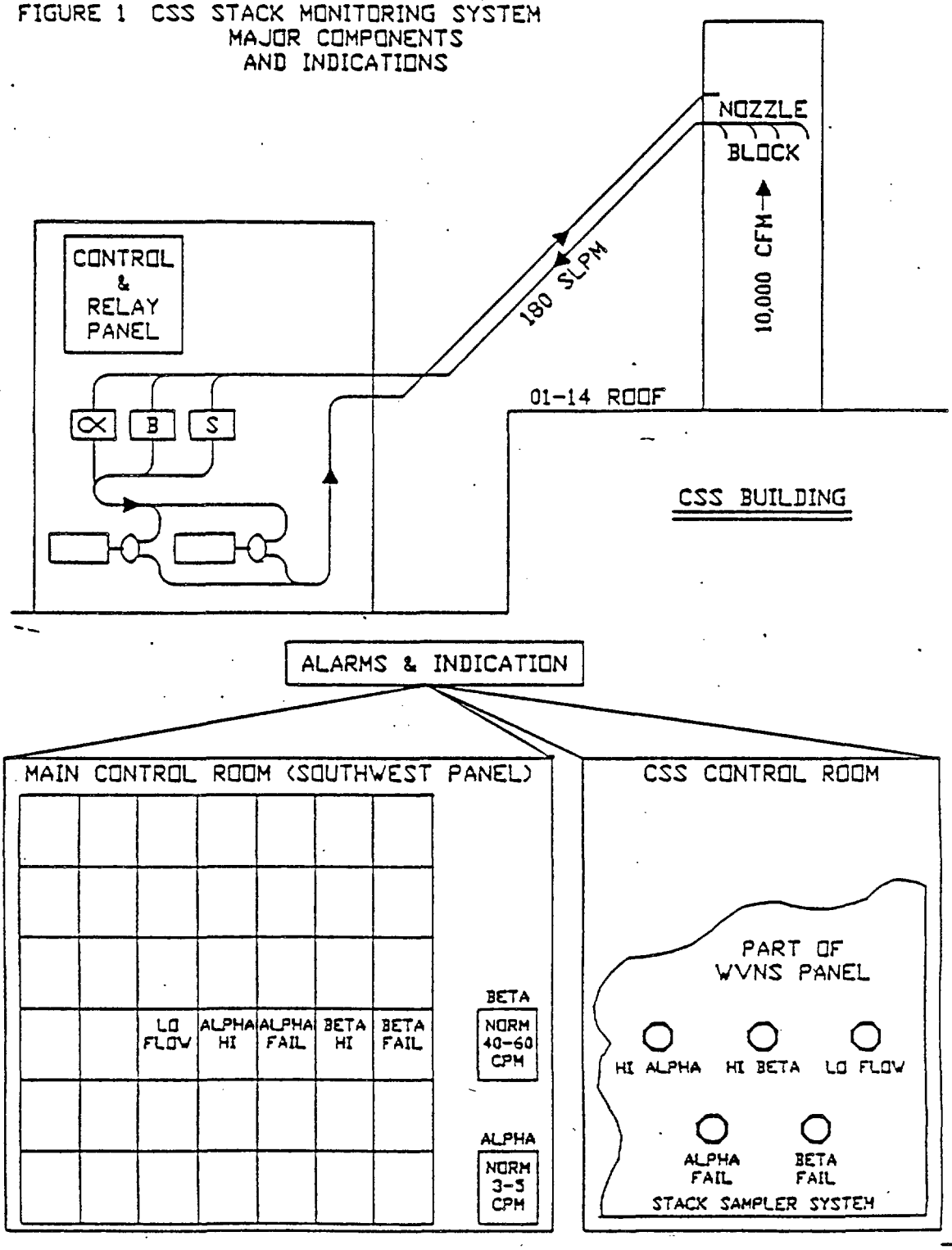
Nuclide	Amount Released (uCi/yr)	Effective Dose Equivalent (rem)[1]	Whole Body Dose (rem)[2]	Organ Dose (rem)[2]	Organ[2]
H-3	2.3 E+05	8.7 E-08	2.5 E-07	2.5 E-07	Whole Body
C-14	2.6 E+05	7.0 E-06	5.7 E-05	9.9 E-05	Red Marrow
Sr-90	1.4 E+02	2.7 E-08	8.4 E-07	4.6 E-06	E.B.[3]
I-129	3.9 E+02	4.7 E-06	9.8 E-06	9.8 E-05	Thyroid
Cs-134	1.2 E+00	8.6 E-09	3.2 E-09	4.0 E-09	Thyroid
Cs-137	1.5 E+02	1.5 E-06	5.1 E-07	6.3 E-07	Thyroid
Pu-238	1.7 E-01	2.9 E-08	1.4 E-07	3.7 E-06	E.B.
Pu-239	3.0 E-02	5.7 E-09	2.7 E-08	7.8 E-07	E.B.
Pu-240	2.2 E-02	4.2 E-09	2.0 E-08	5.7 E-07	E.B.
Pu-241	2.1 E+00	8.2 E-09	4.2 E-08	1.3 E-06	E.B.
Am-241	2.2 E-01	4.6 E-08	2.2 E-07	5.9 E-06	E.B.
Cm-244	1.9 E-01	2.1 E-08	8.7 E-08	2.1 E-06	E.B.
		2.9 E-6	2.1 E-6	9.9 E-05	Thyroid
				9.9 E-05	Red Marrow
				1.9 E-05	E.B.

1 Based on WVDP Site Specific Dispersion (See WVDP General Information Section F) coupled to AIRDOS-EPA dose assessment code.

2 Values calculated by AIRDOS-EPA version CAAC - (See WVDP General Information - Section E).

3 E.B. = Endosteal Bone

FIGURE 1 CSS STACK MONITORING SYSTEM
MAJOR COMPONENTS
AND INDICATIONS



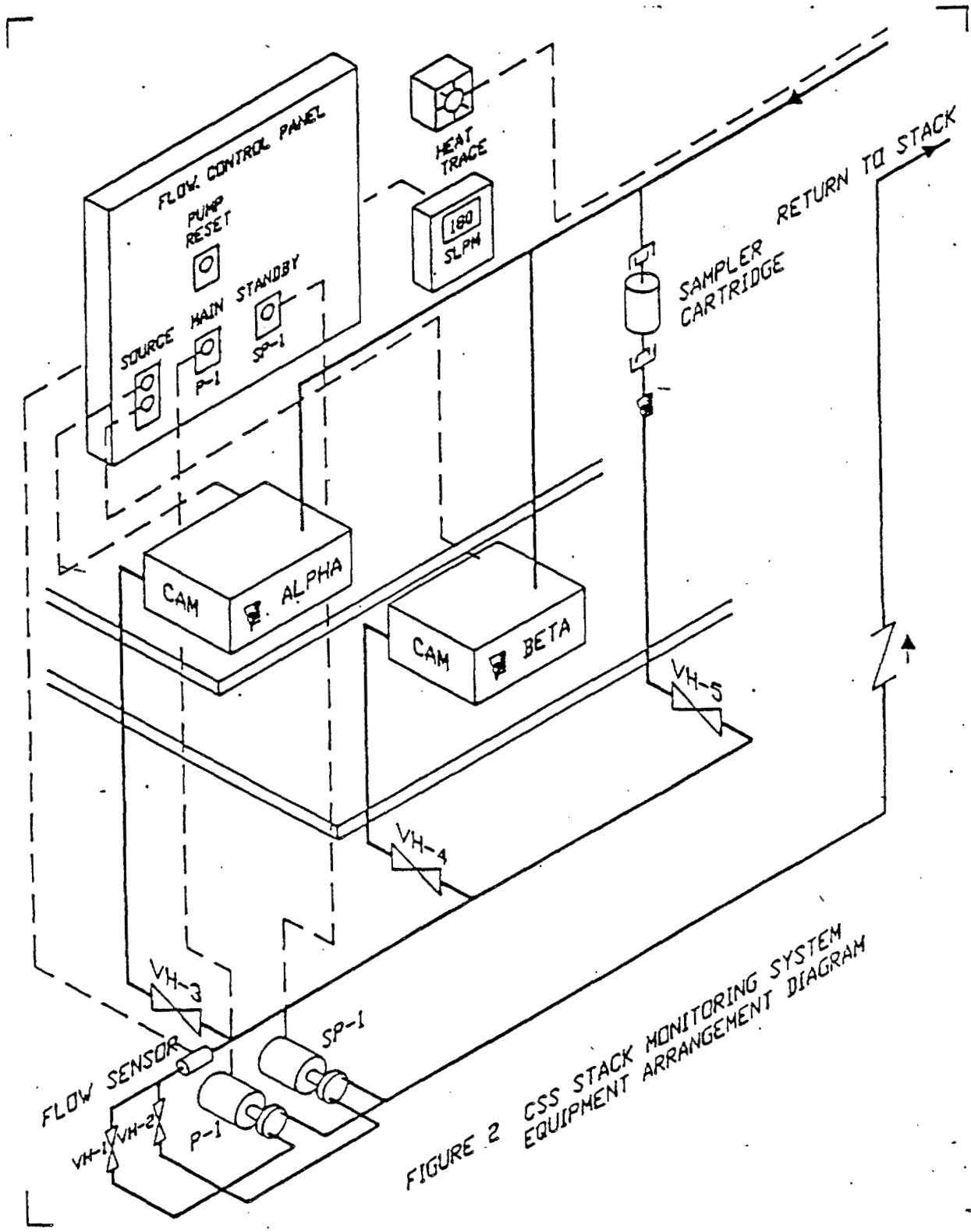
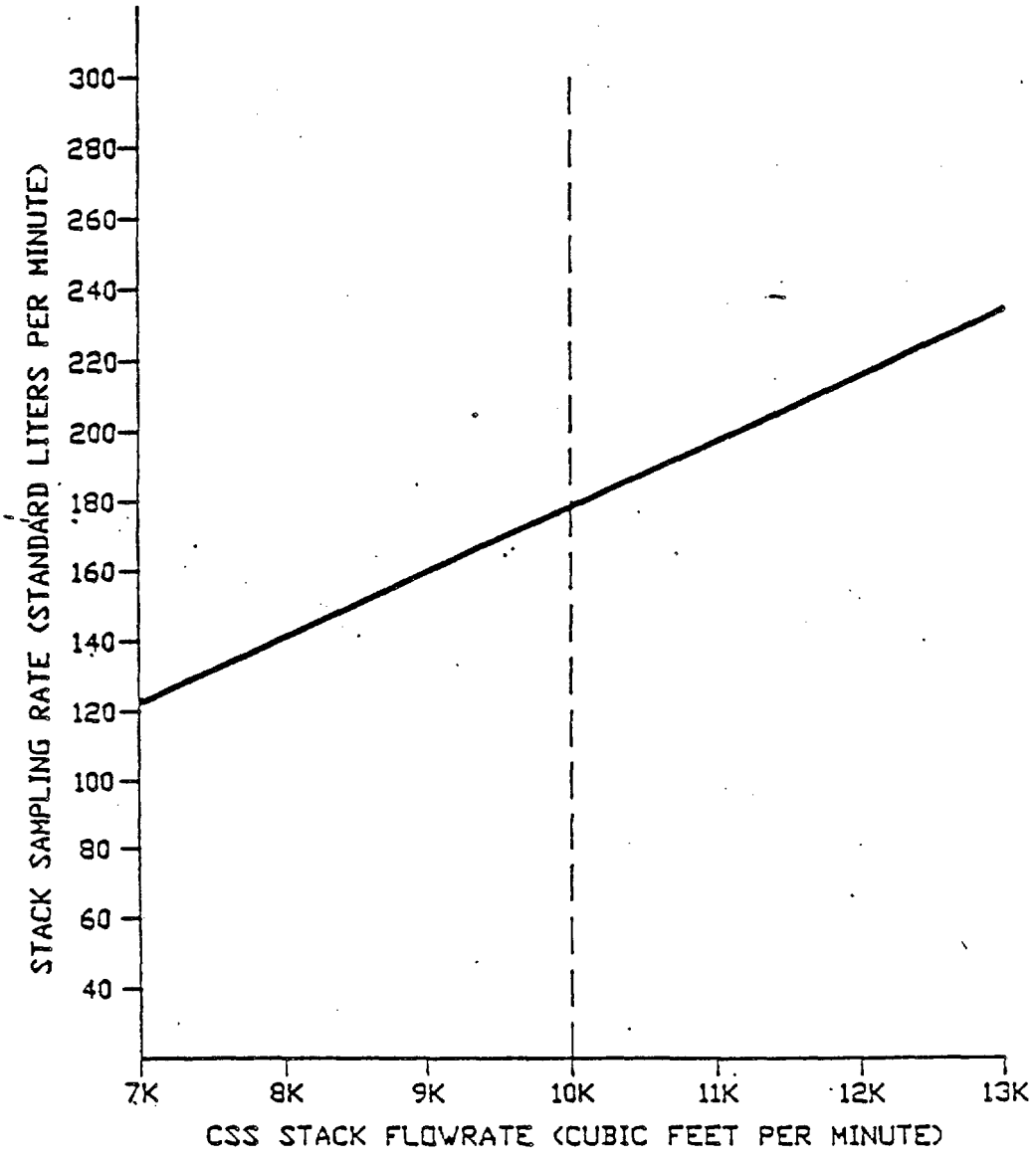


FIGURE 2 CSS STACK MONITORING SYSTEM EQUIPMENT ARRANGEMENT DIAGRAM

FIGURE 3 ISOKINETIC SAMPLING RATE AS A FUNCTION OF CSS EXHAUST FLOWRATE



From : Technical Director

WIN : AD:87:0134

Date : August 4, 1987

Subject : Processing Test Batches of Cement

To : B. C. Gay
C. E. Swenson

cc: J. J. Duker
R. F. Gessner
R. A. Humphrey
J. F. Janes
J. L. Knabenschuh
J. E. Krauss
C. J. Roberts
D. J. Sawyer
MRC-0652, 0800

I have reviewed with Safety and Environmental Assessment our plan to process some test batches of cement at the CSS by introducing nonradioactive water into the waste dispensing cell and mixing it with cement to test the mixers and related hardware.

This review was necessitated by the directive to not "process" radioactive material through the CSS until such time that an EPA discharge permit was received. Since the water addition will be made into a contaminated tank, a slight amount of radioactivity could be introduced to mixers. Since this does not introduce new radioactive material into the process, I believe that the system can be tested in advance of actually receiving the permit.

You are therefore authorized to proceed with addition of water to the waste dispensing cell and ultimately processing of those solutions into cement on the current schedule. No additional radioactivity will be added to the system as a result of this testing.

Reviewed and Approved:

S. Marchetti, Vice President
Technical Director
West Valley Nuclear Services Co.

Safety & Environmental Assessment

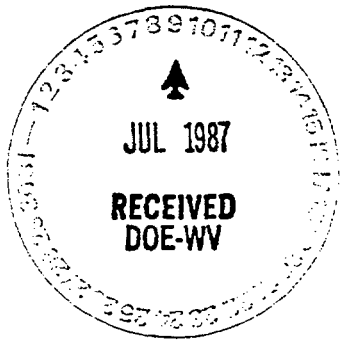
GEW1271

West Valley
Nuclear Services Company
Incorporated

WD:87:0437

P.O. Box 191
West Valley, New York 14171-0191

July 9, 1987



Dr. W. W. Bixby, Director
West Valley Project Office
U. S. Department of Energy
P. O. Box 191
West Valley, New York 14171-0191

Dear Dr. Bixby:

SUBJECT: NESHAPS Application Materials

Enclosed are the NESHAPS application materials for the following systems:

- Supernatant Treatment System
- Cement Solidification System
- Lag Storage/Super Compactor
- Contact Handled Size Reduction

In addition to the four facility specific packages, there is also a package of Project general information which provides overview materials and data common to the various systems and to the Project as a whole.

These materials are for your review and further disposition.

Very truly yours,

For C. J. Roberts, Manager
Safety and Environmental Assessment
West Valley Nuclear Services Co., Inc.

PCN:mcw

HE:87:0092

MCW0720:S/EA08

0344:87:10

incomplete (no boundary doses)
draft telefaxed by Eli to Giardina
on 6/26/87 A.M.

June 25, 1987

DRAFT 6-25-87
COPIES TO: KRAUSS
KNABENSCHUH
ROBERTS
DOOLEY
BIXBY
MAESTAS
ENGLERT

Mr. Paul A. Giardina
U.S. Environmental Protection Agency
26 Federal Plaza
New York, New York 10278

SUBJECT: Circumstances Associated with Startup of Unpermitted Sources of Radioactive Air Emissions - WVDP Building 01-14 and Supernatant Treatment System Ventilation Systems

Dear Mr. Giardina:

Discussions with you and other EPA Region II representatives during the meeting at the West Valley Demonstration Project (WVDP) held on June 17, 1987, indicated the need for the WVDP to provide additional information about the startup of two sources of radioactive air emissions. These sources are the 01-14 Building heating and ventilation system, which went into radioactive service on December 11, 1985, and the Supernatant Treatment System (STS) ventilation system which was used on a temporary and intermittent basis between April 15, 1987 to June 5, 1987.

The 01-14 Building was an existing facility when DOE assumed operational control of the WVDP site in February 1982. It contains two cells; an off-gas treatment cell and an acid recovery cell, neither of which had been placed into radioactive service. The equipment in the off-gas treatment cell has since been refurbished and modified by the WVDP for use in the high-level radioactive waste vitrification off-gas treatment system. The acid recovery cell was refitted to house a low-level radioactive waste cement solidification system. A heating and ventilation supply was part of the original equipment in this building; this portion of the system was operational when turned over to DOE. The facility also contains a ventilation exhaust system, which was refurbished, with minor modification, by the Project to provide proper airflow and contamination control for the cells and support areas.

The 01-14 Building ventilation exhaust system repairs were completed and the system was started for the first time by the Project on October 17, 1985. Between October 17 and December 11, 1985, the ventilation system was checked out and balanced, and the discharge sampling and monitoring equipment was installed. The cement solidification system started processing radioactive solutions on December 11, 1985 when the first of a total of 3,200 gallons of uranyl nitrate (left over from pre-DOE operations) was transferred from storage tanks into the process building. This transfer marked the first time that radioactive materials were processed through the 01-14 Building and consequently the 01-14 Building ventilation system entered radioactive service.

Since processing of the 3,200 gallons of uranyl nitrate solution was completed no other radioactive solutions have been processed. Subsequent to the uranyl nitrate run, several processing campaigns have been performed on water which flushed out the process pipes and vessels. These campaigns were performed to check out modifications to material handling equipment in the cement system.

DOE believes that this system did not require a NESHAPs permit prior to entering radioactive service. The reasons are as follows: the uranyl nitrate processed in this system had previously been stored in tanks which were ventilated to the existing vessel off-gas system and discharged via the existing process building main stack. Hence, this was not considered to be a new source, but rather an existing source being released from a different, but existing discharge point (i.e., the 01-14 vent stack). Dose estimates for this release point are considerably below the values specified at 40 CFR 61.98 for exemption from the reporting requirements. The combination of these factors led the project to conclude that this system should be excluded from the NESHAPs permit requirements.

Subsequent guidance from both EPA and DOE indicates a need to obtain a permit for this system. However, when this system started radioactive service there was no definitive guidance as to the permitting or reporting mechanism to satisfy NESHAPs . The first formal DOE ~~received by~~ guidance to the WVDP ~~occurred~~ was received in January 1986 at a point in time when DOE policy was to respond to NESHAPs on a Department wide basis ~~versus~~ rather than a regional or field basis which now exists. The source has been administratively secured by prohibiting the introduction or processing of new radioactive solutions to this system until a NESHAPs permit is obtained.

Since the 01-14 Building ventilation system entered radioactive service, the discharge has been monitored and sampled to determine the amount of radioactivity discharged. This system consists of a multiport probe to isokinetically sample the exhaust. The gas thus sampled is split into three streams and passes through a sampler, an alpha particulate monitor and a beta particulate monitor simultaneously. The filter media are screened weekly for gross activity and composited quarterly for determination of specific isotopes including gamma-emitting nuclides, I-129 and Sr-90. The stack sampling data from December 1985 through May 1987 are presented in Table 1.

The atmospheric dispersion and dose assessment code AIRDOS-EPA (version CAAC) is used to calculate the radiological impacts associated with air discharges. The maximally exposed off-site individual (residing 1.9 km NNW of the site) was estimated to have received a whole body dose (50 year committed dose) of 3.3×10^{-5} mrem and a critical organ dose (endosteal bone) of 1.8×10^{-4} mrem for discharges from the 01-14 Building through the end of calendar year 1986. ~~The calculated doses to the maximum off-site individual residence for the first quarter of 1987 are 2.1×10^{-5} mrem whole body and 4.7×10^{-4} mrem to the critical organ (endosteal bone).~~

The calculated doses ~~for~~ from CSS through May 31, ~~1987~~ are 3.5×10^{-5} mrem (whole body) and 8.1×10^{-4} mrem (endosteal bone). It should be noted that the 1987 doses are higher than 1986 due primarily ~~to the lack of specific~~ transuranic nuclide analyses ~~which have yet to be performed. These data are summarized in Table 2.~~ have not yet been received from the contract laboratory. The calculated doses at a residence are conservative assumptions which were made to the conservative assumptions concerning the specific radionuclide composition of the emissions. Data from the

The Supernatant Treatment System (STS) ventilation system is a new system which was used on a temporary basis from April 15, 1987 to June 5, 1987. The system is designed to provide proper airflow and contamination control to the high-level radioactive waste supernatant treatment system operating areas, valve aisle, and process vessels during normal operation. It can also provide ventilation to the high-level waste tank 8D-2 which is normally vented via the existing waste tank farm ventilation system to the process building main stack. insert A

The STS ventilation system was used as a temporary replacement for the existing waste tank farm ventilation system on 17 occasions between April 15 and June 5, 1987. This was done to provide adequate contamination control during the installation of eight penetrations in the roof of tank 8D-2. During this period the system operated for a total of approximately 60 hours. The system was secured during the relatively long intervals between tank penetration operations and after all eight penetrations had been completed.

During this temporary operation of the STS ventilation system, the exhaust was continuously monitored and sampled. An isokinetic sampling probe was installed in the discharge duct and samples were passed through an air particulate sampler which monitored gross beta activity, followed by an activated charcoal cartridge for collection of I-129. Downstream of this arrangement was a desiccant sampler for collection of tritium. The monitoring and dosimetric data for this discharge are presented in Table 3. The resulting radiological impacts to the maximally exposed off-site ~~individuals~~ resident as calculated by AIRDOS-EPA (version CAAC) are 1.4×10^{-10} mrem whole body dose and 3.8×10^{-9} mrem critical organ dose (endosteal bone). Maximum hypothetical site boundary doses are mrem whole body and mrem bone. It is hoped that this information clarifies the circumstances surrounding the start-up of the 01-14 Building ventilation system and the STS ventilation system. In both cases the radioactivity in the areas being ventilated was previously vented to the atmosphere from other existing release points. In the case of the 01-14 Building, it was an existing system and was considered exempt from permitting requirements. The STS vent start-up was a temporary application of a system and, therefore, was thought to be exempt from permitting in this mode of operation. The data presented for each system indicate that the releases and the corresponding radiological impacts are inconsequential.

Nearest NW + WNW @ 1050 m 8.7×10^{-7} sec

Highest NNW @ 1600 m 9.3×10^{-6}

Insert A

Dose equivalents also were calculated using ARDOS-EPA for a hypothetical maximum individual permanently located at the point of maximum exposure at the site boundary. This location is 1600 meters NNW of the discharge point. Note that the maximum potential exposure does not occur at the nearest site boundary which is at 1050 meters NW and WNW. The code predicts an annual average concentration about eight times larger at the 1600 meter distance. The calculated hypothetical maximum site boundary doses from CSS emissions are summarized in Table 2.

Presently, both systems have been secured and will remain secure until permits are received. The contamination control function for the HLW tank 8D-2 continues to be provided by the existing waste tank farm vent system, now that tank modifications have been completed. The Cement Solidification System, ventilated by the 01-14 Building system will not receive additional radioactive solutions until the ventilation system has been permitted under 40 CFR 61, Subpart H. The ventilation system remains in operation to control contamination presently in the cement solidification cell.

Sincerely,

W. W. Bixby, Director
West Valley Project Office

cc: J. P. Hamric, DOE-ID

WWB:030:87

WWB:tl

TABLE 1:

SUMMARY OF ~~PREVIOUS AND PRESENT YEARS~~ EMISSIONS THROUGH MAY, 1987
FROM ~~FOR~~ THE CEMENT SOLIDIFICATION SYSTEM

Year	Total Volume m^3	Total Curies Released		
		Gross Alpha	Gross Beta	Specific Nuclide
1985[1]	7.3 E+06	NDA[2]	NDA	NDA
1986	1.5 E+08	4.54 E-08	6.2±2.9 E-07	Sr-90 2.13±0.3 E-07 I-129 <1.5 E-07 U-234 1.56±0.3 E-08 U-235 5.89±5.8 E-10 U-238 1.47±0.3 E-08 Pu-238 7.69±6.3 E-10 Pu-239 3.54±1.2 E-09 Am-241 2.04±1.1 E-09
1987[3]	3.7 E+07 (First Quarter)	1.74 E-08	3.76±0.55 E-07	Co-60 1.9±0.8 E-08 I-129 9.6±1.9 E-08 Cs-137 4.4±0.3 E-07
1987[4]	2.5 E+07 (Second Quarter)	1.24 E-08	2.22±0.42 E-07	See Note 5

1 The Cement Solidification System (CSS) began operation in December of 1985. Its exhaust is continuously monitored for radioactivity, but no measurable activity was released from the very limited operations conducted during 1985.

2 No Detectable Activity.

3 Through May 31, 1987. ← Cindy - This is note 4

This is note 3

4 Additional data to follow pending completion of specific transuranic nuclide analyses.

5 Composites will not be sent in for analysis until end of quarter, June 30, 1987.

TABLE 3

SUMMARY OF ~~PRESENT YEARS~~ EMISSIONS ~~FOR~~ From THE
SUPERNATANT TREATMENT SYSTEM PERMANENT VENTILATION SYSTEM

Year	Total Volume m^3	Total Curies Released			
		Gross Alpha	Gross Beta	Specific Nuclide	
~~1~~987	1.45 E+02	1.4 E-13	8.4 E-13	H-3	5.2 E-08
				Co-60	8.9 E-11
				Cs-134	9.7 E-12
				Cs-137	4.24 E-11
				Eu-154	2.9 E-11

Maximum Hypothetical ~~For~~ of
Dose Consequences ~~For~~ STS Releases ~~For~~ In 1987 — cofs

Location	Dose Equivalent (mrem)	
	Whole Body	Critical Organ[1]
Actual residence	5.8 E-09 ~~1.41 E-10~~	4.0 ~~3.8~~ E-09
Site boundary	6.7 E-09	4.5 E-09

[1] Endosteal Bone

TABLE 3

SUMMARY OF EMISSIONS FROM THE
SUPERNATANT TREATMENT SYSTEM PERMANENT VENTILATION SYSTEM

Year	Total Volume m^3	Total Curies Released			
		Gross Alpha	Gross Beta	Specific Nuclide	
1987	1.45 E+02	1.4 E-13	8.4 E-13	H-3	5.2 E-08
				Co-60	8.9 E-11
				Cs-134	9.7 E-12
				Cs-137	4.24 E-11
				Eu-154	2.9 E-11

MAXIMUM HYPOTHETICAL DOSE CONSEQUENCES OF STS RELEASES IN 1987

Location	Dose Equivalent (mrem)	
	Whole Body	Critical Organ[1]
Actual Residence	1.41 E-10	3.8 E-09
Site Boundary		

[1] Endosteal Bone

DRAFT 24 JUN 87

Copies to Bixby
Maestas
Roberts ?
Knabenschuh
Englert

Mr. Paul A. Giardina
U.S. Environmental Protection Agency
26 Federal Plaza
New York, New York 10278

SUBJECT: Circumstances Associated with Startup of Unpermitted Sources of Radioactive Air Emissions - WVDP Building 01-14 and Supernatant Treatment System Ventilation Systems

Dear Mr. Giardina:

Discussions with you and other EPA Region II representatives during the meeting at the West Valley Demonstration Project (WVDP) held on June 17, 1987, indicated the need for the WVDP to provide additional information about the startup of two sources of radioactive air emissions. These sources are the 01-14 Building heating and ventilation system, which went into radioactive service on December 11, 1985, and the Supernatant Treatment System (STS) ventilation system which was used intermittently during the period April 15, 1987 to June 5, 1987.

The 01-14 Building was an existing facility when DOE assumed operational control of the WVDP site in February 1982. It contains two cells; an off-gas treatment cell and an acid recovery cell, neither of which had been placed into radioactive service. The equipment in the off-gas treatment cell has since been refurbished and modified by the WVDP for use in the high-level radioactive waste vitrification off-gas treatment system. The acid recovery cell was refitted to house a low-level radioactive waste cement solidification system. A heating and ventilation supply was part of the original equipment in this building; this portion of the system was operational when turned over to DOE. The facility also contains a ventilation exhaust system, which was refurbished, without modification, by the Project to provide proper airflow and contamination control for the cells and support areas.

CIN0203:SEA-69

The 01-14 Building ventilation exhaust system repairs were completed and the system was started for the first time by the Project on October 17, 1985. That same day, the DOE Project Office contacted EPA Region II to determine what the reporting mechanism would be for new sources of radioactive air emissions under 40 CFR 61 Subpart H. The information received from internal EPA at that time was that the permitting and reporting mechanisms had not yet been developed but would hopefully be resolved in an internal EPA meeting scheduled for December 1985. Between October 17 and December 11, 1985, the ventilation system was checked out and balanced, and ~~the~~ discharge sampling and monitoring equipment ~~were~~ was installed. The cement solidification system started processing radioactive solutions on December 11, 1985 when the first of a total of 3,200 gallons of uranyl nitrate (left over from pre-DOE operations) was transferred from storage tanks in the process building. This transfer marked the first time that radioactive materials were processed through the 01-14 Building and consequently the 01-14 Building ventilation system entered radioactive service.

Since processing of the 3,200 gallons of uranyl nitrate solution was completed, no other radioactive solutions have been processed through this system. However, subsequent to the uranyl nitrate run, several processing campaigns have been performed on water which flushed out the process pipes and vessels. These campaigns were performed to check out modifications to material handling equipment in the cement system.

DOE believes that this system did not required a NESHAP permit prior to entering radioactive service. The reasons are as follows: the uranyl nitrate processed in this system had previously been stored in tanks which were ventilated to the existing vessel off-gas system and discharged via the existing process building main stack. Hence, this was not considered to be a new source, but rather an existing source being released from a different, but existing discharge point (i.e., the 01-14 vent stack). Dose estimates for this release point are very much below the values specified at 40 CFR 61.98

for exemption from the reporting requirements. The combination of these factors was interpreted to exclude this system from the NESHAP permit requirements.

Subsequent guidance from both EPA and DOE indicates a need to obtain a permit for this system. However, when this system started radioactive service there was no guidance from either DOE or EPA as to the permitting or reporting mechanism (the first DOE guidance was not received by the WVDP until January 1986). The source has been administratively secured by prohibiting the introduction or processing of additional radioactive solutions to this system until a NESHAP permit is obtained.

Since the 01-14 Building ventilation system entered radioactive service, the discharge has been monitored and sampled to determine the amount of radioactivity discharged. This system consists of a multiport probe to isokinetically sample the exhaust. The gas thus sampled is split into three streams and passes through a sampler, an alpha particulate monitor and a beta particulate monitor simultaneously. The filter media are screened weekly for gross activity and composited quarterly for determination of specific isotopes including gamma-emitting nuclides, I-129 and Sr-90. The stack sampling data from December 1985 to June 1987 are presented in Figure 1.

The atmospheric dispersion and dose assessment code AIRDOS-EPA (version CAAC) is used to calculate the radiological impacts associated with air discharges. The maximally exposed off-site individual (residing ~~2.1 km WSW~~ 1.9 new of the site) was estimated to have received a whole body dose (50 year committed dose) of 3.3×10^{-5} mrem and a critical organ dose (~~thyroid~~ bone) of ~~6.9×10^{-6}~~ mrem for discharges from the 01-14 Building through the end of calendar year 1986. The calculated doses for the first quarter of 1987 are _____ whole body and _____ critical organ.

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The Supernatant Treatment System (STS) ventilation system is a new system which entered radioactive service on a temporary basis on April 15, 1987. The system is designed to provide proper airflow and contamination control to the (high-level radioactive waste) supernatant treatment system operating areas, valve aisle, and process vessels during normal operation. It can also provide ventilation to the high-level waste tank 8D-2 which is normally vented via the existing waste tank farm ventilation system to the process building main stack.

The STS ventilation system was used as a temporary replacement for the existing waste tank farm ventilation system on 17 occasions between April 10 and June 5, 1987. This was done to provide adequate contamination control during the installation of eight penetrations in the roof of Tank 8D-2. During this period the system operated for a total of approximately 60 hours. The system was secured during the relatively long intervals between tank penetration operations and after all eight penetrations had been completed.

During this temporary operation of the STS ventilation system, the exhaust was continuously monitored and sampled. An isokinetic sampling probe was installed in the discharge duct and samples were passed through an air particulate sampler which monitored gross beta activity, followed by an activated charcoal cartridge for collection of I-129. Downstream of this arrangement was a desiccant sampler for collection of tritium. The monitoring data for this discharge are presented in Table I. The resulting radiological impacts to the maximally exposed off-site individual, as calculated by AIRDOS-EPA (version CAAC) are _____- whole body dose and _____ organ dose (_____).

It is hoped that this information clarifies the circumstances surrounding the start-up of the 01-14 Building ventilation system and the STS ventilation system. In both cases, the radioactivity in the areas being ventilated was previously vented to the atmosphere from other existing release points. In the case of the 01-14 Building, it was an existing system and thus exempt from

permitting requirements. The STS vent start-up was a temporary application of a system and therefore, was exempt from permitting in this mode of operation. The data presented for each system indicate that the releases are insignificant and the corresponding radiological impacts are inconsequential.

Presently, both systems have been secured. The contamination control function for the HLW Tank 8D-2 continues to be provided by the existing waste tank farm vent system, now that tank modifications have been completed. The Cement Solidification System, ventilated by the 01-14 Building system will not receive additional radioactive solutions until the ventilation system has been permitted under 40 CFR 61, Subpart H. The ventilation system remains in operation to control contamination presently in the cement solidification cell.

Very truly yours,

W. W. Bixby, Director
West Valley Project Office
U. S. Department of Energy
~~West Valley Nuclear Services Co., Inc.~~

HE:87:

JPE:caf

CIN0203:SEA-69

draft Englert → JLK 6/25
to be issued by JEK on 6/26

Project Management

:87:

June 25, 1987

STS and 01-14 Ventilation System

R. F. Gessner
J. L. Knabenschuh

R. E. Lawrence
S. Marchetti

cc: J. P. Englert
C. J. Roberts

MRC -

Based on discussions with representatives of EPA Region II during a meeting at the WVDP on June 17, 1987, discharge permits are required for potentially radioactive air emissions from the STS vent system ("PVS") and the 01-14 Building vent system. The Project is in the process of obtaining these permits, but until the applications are approved these systems are to be secured from further radioactive service.

The STS vent system is to remain out of service, with the existing waste tank farm ventilation system providing the necessary contamination control for the high-level waste tanks. The 01-14 Building ventilation system will remain in operation to provide control of existing contamination in the CSS cell, but the introduction or processing of radioactive materials through this system is to be deferred until an approved permit has been obtained. We anticipate that this will be about August 1, 1987.

Other ventilation and off-gas systems scheduled to enter radioactive service in the near term must have an approved discharge permit prior to hot operations. Questions concerning permit applications and their processing by ERA Region II should be referred to J. P. Englert or C. J. Roberts.

J. E. Krauss
President
West Valley Nuclear Services Co., Inc.

CJR:caf

CIN0206:SEA-69

Rdg.

West Valley Project Office
Idaho Operations Office
P.O. Box 191
West Valley, NY 14171

May 20, 1987

Mr. Conrad Simon, Director
Air and Waste Management Division
U. S. Environmental Protection Agency
Region II
26 Federal Plaza (Foley Square)
New York, New York 10278

SUBJECT: Notification of Actual Startup of the Cement Solidification System at the West Valley Demonstration Project (WVDP)

Dear Mr. Simon:

As required by Title 40 of the Code of Federal Regulations Part 61.09(a)(2) of the National Emission Standards for Hazardous Air Pollutants, you are hereby notified that the Cement Solidification System at the West Valley Demonstration Project in West Valley, New York, became fully operational on December 11, 1985. A complete description of this facility was included in the application for construction approval provided in the May 20, 1987, letter from W. W. Bixby, Director of the West Valley Demonstration Project to your office.

Should you or your staff have any questions concerning this notification, please contact me at 716-942-4312.

Sincerely,

W. W. Bixby, Director
West Valley Project Office

cc: S. Meyers, EPA (ANR-458)
M. L. Walker, DOE-HQ (EH-1)

EM:141:87

EM:tl